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THESIS

THE EFFECT OF FUNDING SCHEME ON THE
PERFORMANCE OF NAVY REPAIR ACTIVITIES

by

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March 2005

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THE EFFECT OF FUNDING SCHEME ON THE PERFORMANCE OF NAVY
REPAIR ACTIVITIES

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ABSTRACT

Navy repair activities are social and political as well as financial and technical systems. As systems, their architecture has a controlling effect on their behavior. One factor that works throughout the architecture is the particular funding scheme and the rules, both written and cultural, that any particular scheme brings with it. This paper examines the interaction of funding scheme, as a rules-based force, with the changing architectures of Navy repair activities to try to determine the effect of the funding scheme on the performance of that architecture. It shows that changes to the architecture of the ship maintenance system in the Northwest region have worked together with a conversion of the funding scheme to Mission Funding to improve the decisions that are made within that architecture.

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EXECUTIVE SUMMARY

The Navy has made changes to the architecture as well as to the funding scheme of its maintenance organization in the Northwest. This work describes, analyzes, and investigates the effects of these changes. A third funding scheme is briefly introduced to point to a possible alternative for the future.

Why the Changes: Budget cuts were a forcing function for the Navy to seek means of becoming more efficient. The Navy tried to cut costs through a move to consolidate Navy maintenance activities. A barrier to this consolidation was the fact that different maintenance organizations within the same region operated under different funding schemes, namely, Mission Funding and Navy Working Capital Fund (NWCF).

Description of the Funding Schemes: Under Mission Funding, each year's worth of labor at each maintenance organization is paid for in advance. Under NWCF, labor is paid for as work is accomplished using a direct man-day rate that is calculated to include costs of activity operation as well as a performance result from previous years. End-of-year accounting and the timing of payment for material ordered and used are additional differences between the two schemes. A comparison with similar funding schemes in private industry highlights the fact that free enterprise forces are not at work at Navy industrial facilities no matter which funding scheme is used.

History of the Consolidation of the Maintenance Activities: In the Northwest region, there had been four maintenance activities: Puget Sound Naval Shipyard (PSNS), Trident Refit Facility (TRF) Bangor, Shore Intermediate Maintenance Activity (SIMA) Everett, and Supervisor of Shipbuilding (SUPSHIP) Puget Sound (who accomplished repair only through private contractors). TRF merged with SIMA in 1997 to form the Intermediate Maintenance Facility (IMF) Pacific Northwest. PSNS would merge with IMF in 2003 only after PSNS converted from NWCF to Mission Funding.

Between 1997 and 2003, an interim consolidation concept was tried: Regional Repair Centers (RRCs) were established whereby the repairing of certain components was consolidated at only one of the specialty shops in the region and all others were

disestablished. However, because PSNS was still under NCWF and the others were under Mission Funding, a dual funding scheme was set up. This dual scheme proved to be complex and contentious.

SUPSHIP was merged with PSNS&IMF in 2003. The consolidated command was named the Northwest Regional Maintenance Center (RMC).

Comparative Analysis of Architectures of the System at Three Stages of Evolution: The architecture of the maintenance activities and their upper echelon commands and customers can be broken out into several views (functional, command structure, funding flow, organizational, and physical) at three stages of evolution (the pre-merger state, the transition period involving the RRCs, and the post-merger state.) These views are then mapped against each other and analyzed for congruency. Through this mapping and comparison, the pre-merger state can be characterized as having control, organization, and funding flow consistent with type of ship receiving maintenance (surface ships, aircraft carriers, or submarines). This made consolidation nearly impossible. Mapping of the transition state showed that this alignment by ship type also made things difficult for the RRC operation and that the mix of Mission funding and NWCF caused difficulties as well. The concurrent change in architecture and change in funding scheme laid out in post-merger views show that flexibility in resource sharing among the subordinated activities is facilitated and that cooperation among the representatives of the three ship types assures that the most important maintenance is accomplished. Funding flow has been streamlined down to one budget for the consolidated command. Further internal realignment is suggested.

Direct Measurement of Performance Very Difficult: Looking at the work measurement system employed by the maintenance activities shows that reliable baseline performance output measurement of Navy maintenance is not evident. Without a ready baseline measurement, comparison of performance output under the two funding schemes is beyond the scope of this study.

Changes in How the System Performed Was Studied By Survey: However, performance characteristics within the architecture could be studied by means of a survey. Persons to survey were selected from departments and levels of the organization

such that key decision points throughout the operation were represented. The purpose was to determine changes in the way key decisions were reached which would point to changes in system performance that were brought about by funding scheme change at PSNS, independent of the architectural changes of consolidation.

Results of the Survey: Of thirty-seven changes due to mission funding, fifteen had to do with a shift in organization level where control resides, twenty had to do with changes in criteria or motivation, five had to do with changes in results or process, and one was used to indicate the organizational level below which no change was reported.

Of the fifteen shifts in control, twelve control areas increased in organization level where the control resides, only one went down, and two areas shifted laterally across departments. In six of the fifteen shifts, the office to which control migrated was the Comptroller's Office. Control also migrated to the Local Board of Directors (LBOD), a Budget Execution Control Board (BECB), an Overtime Control Board (OCB), a New Work Acceptance Committee (NWAC), and Pacific Fleet Headquarters.

The changes in criteria/motivation were drastic, often going from a practice being allowed to being prohibited, or from a certain process to no process at all, or from one criterion to an entirely different one. There were no changes merely by amount or degree. The changes in result/process, on the other hand, were of a graduated nature.

Compared to PSNS under NWCF, Mission Funding operations are characterized by: 1) a rise in the organizational level at which control is exercised; 2) more committees formed to give both expert opinion as well as stakeholder buy-in regarding control of scarce resources (such as: a fixed number of worker man-hours and a fixed budget); 3) a criteria change in how maintenance priorities are set – from a tendency to find more work for which money was received (under NWCF) to a tendency to get the most maintenance done on the highest priority. A list of specific survey results is tabulated in Appendix E.

Is Mission Funding the Final Answer? Consolidation and funding scheme change represent improvements imposed by Navy headquarters. A better approach might be to try to set up a system whereby system improvements would occur more spontaneously. Such an approach, Intrapreneuring, was taken by another federal agency, the National Forest Service. Intrapreneuring had indications that natural system

improvement tendencies could exist in a government entity. Such a system would be difficult but possible to implement in the Navy maintenance environment. However, the Navy's RRCs and other such centers of specialization could possibly benefit from operating under an Intrapreneuring scheme.

Conclusion: Navy efforts to bring about efficiencies and concomitant savings by means of consolidation of maintenance activities in the Northwest region were thwarted by lack of a systems approach. The existing system encouraged the co-existence of separate independent maintenance activities working for different bosses under different, incompatible funding schemes; consequently when a change was forced, as with the set up of the RRCs, the system pushed back. Success came only through a revision of the architecture, which included a congruence of funding scheme, a streamlining of command structure, cooperation of the stakeholders, and a single maintenance budget for the region. System Architectural change and the change to Mission Funding have worked together to improve the decisions that are made within the architecture which should result in improved performance.

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I. INTRODUCTION

A. BACKGROUND

As a result of the Cold War coming to a close, the Navy's budget was drastically cut. Consequently, the Navy has had to reduce the number of ships of the Pacific and Atlantic fleets from a total of about 600 during the Reagan era to less than 280¹. Along with the reduction in the number of ships, the Navy was forced to close half of its eight Naval Shipyards and decommission all but two of its many repair ships.

Over the last decade, starting with the Gulf War, military commitments have increased, requiring the Navy to do more with those fewer ships – ships that are aging. Not enough new ships have been built to replace the older ones and so older ships remain in service. Doing more with these older ships has resulted in increased need for maintenance. Since maintenance on aging ships requires an ever-increasing investment for the same or even for decreased performance, the Navy recognizes that a better investment would be made in designing and building new ships. But, given the reduced budget, where is the Navy to get the money for new ships? One avenue being pursued is savings achieved by increasing efficiency in the performance of ships' maintenance.

A major initiative to increase efficiency in the performance of ships' maintenance is Regional Maintenance. In the early 1990s, there were separate maintenance activities in each geographical area where there was a significant fleet presence. Each one of these maintenance activities provided one of two traditional levels of maintenance, either intermediate (I) level or depot (D) level. Each level operated under its own concept of procedures and organizational chain of command. However, in 1993, the Chief of Naval Operations and the head of Naval Sea Systems Command, together with the Maintenance Officers of the Atlantic and the Pacific Fleets agreed that the redundancies of having the several maintenance facilities in each region was costly, and that having more than one maintenance concept was cumbersome. At the same time, they felt that efficiencies in

¹ Per U.S. Navy Information web site www.chinfo.navy.mil, the Navy currently has 279 active ships and submarines excluding those manned with civilian crews.

each of the organizations could be improved. And so, they came up with the Regional Maintenance Initiative whereby the Navy's maintenance activities were to be aggregated within the several geographical areas, or regions, in which they were concentrated. Plans were begun to both consolidate maintenance activities as well as to integrate depot level maintenance and intermediate level maintenance into a single maintenance concept. Executive offices called "Regional Maintenance Centers" were subsequently set up in each region to implement the plans.

An obstacle to the consolidations within the regions was the fact that funding schemes for the different maintenance activities within the regions were not the same. One or more activities within some regions were under a funding scheme called Navy Working Capital Fund while others in the same region were under the Resource Management System (also referred to as Mission Funding). Although the Regional Maintenance Centers tried work-arounds in the process of consolidating, it eventually became apparent that consolidation was too difficult to reasonably accomplish until a single funding scheme could be chosen under which all the maintenance activities that were being considered for consolidation could be placed.

In fiscal year 1999, the maintenance activities of one region, Hawaii, were converted to operate under a single one of the funding schemes, allowing those maintenance activities there to be more easily consolidated under one command. Subsequently, in May of 2003, a second consolidation was initiated in the Pacific Northwest. By this consolidation the I and D-level maintenance activities of the Pacific Northwest were merged under one commander, subsequently, beginning FY04, one activity converted to the same funding scheme of the other activity. The one funding scheme chosen for the Pacific Northwest Region, which is the same as that chosen for the Hawaii Region, was Mission Funding.

B. PURPOSE

The purpose of this thesis is to determine the effect that the choice of the particular funding scheme has on the performance of Navy repair activities. This research will evaluate, using a systems architecture approach, the two funding schemes

used by those activities. The objective is to determine advantages and disadvantages of each scheme in the overall performance of the activities. Research will analyze the architectural changes to the maintenance system, which were allowed to come about by changing the funding scheme. Research will also try to discover human and organizational motivations that might be affected by funding scheme choice by means of a survey of key persons at decision points across organizational levels. A short comparison with private industry will be discussed to examine what similarities may exist with each funding scheme. A third funding scheme, one that has been used with success in a different federal agency, will be introduced and explored for applicability to Navy maintenance activities.

C. RESEARCH QUESTIONS

The following questions will be addressed within this paper:

1. What are the current funding schemes?
2. What are the advantages and disadvantages of each funding scheme?
3. Have recent changes to the organization of Navy Maintenance in the Northwest continued or improved alignment of its architecture. And, is this an important factor in improving overall system performance?
4. How does each funding scheme affect the decisions that are made at each level of the organization?
5. What actions are allowed or prohibited under each funding scheme?
6. What actions are facilitated or hindered under each funding scheme?
7. What natural performance improvement tendencies exist under each scheme?
8. How does the funding scheme affect delegation of authority and decentralization?
9. How does each funding scheme affect communications across the interfaces in the organization?

D. BENEFITS OF STUDY

This study will provide a systems-based analysis to aid in the selection of effective funding schemes for those Navy Activities that perform ship maintenance and repair. The recommendations of this study can be generalized and applied to any government activity performing industrial services.

This study can also benefit government activities for which the funding scheme has already been chosen by defining expected system characteristics that result from each particular funding scheme. With such characteristics defined, better management analysis and decisions can be made.

E. SCOPE AND METHODOLOGY

1. Scope

This thesis will be limited to the study of Navy activities in the Pacific Northwest that perform intermediate (I) and depot (D) level ship repair and maintenance. Funding systems studied are limited to the Navy Working Capital Fund and Resource Management System (Mission Funding). The study also includes an experimental funding scheme being piloted by the National Forest Service.

2. Methodology

The methodology used in this thesis research consists of the following steps:

- a. Review government publications that describe and regulate Navy Working Capital Fund and Resource Management funding schemes.
- b. Conduct a literature review of books, magazine articles, and other library information resources on performance management and performance measurement of human organizations.
- c. Conduct a thorough review of previous research on history, comparison, and performance of Navy working Capital and Resource Management funding systems.

- d. Develop architectural views of the ship maintenance system for discussion and comparison.
- e. Conduct interviews at decision points and interfaces to discover any changes that may have been brought about by funding scheme choice.
- f. Gather information from books, magazine articles, and interviews regarding Intrapreneuring and how the National Forest Service, in particular, has implemented it.

F. ORGANIZATION OF STUDY

This thesis begins with an introduction that briefly states the background, the purpose, and benefits of the study and gives an idea of its nature by means of a listing of the research questions that have been explored. The next chapter goes into the funding schemes in detail with a description and brief history of each as well as an overview of what has been written about their performance. Within this chapter also is a comparison of the architecture/funding scheme relationship with representative companies in private industry. The third chapter lays out the system architecture of Navy ship repair in the Northwest region and analyzes recent changes to that architecture. The fourth chapter explores performance and operational changes at key decision points within the architecture to try to determine some of the characteristics of each of the two funding schemes. Chapter V introduces a different scheme – an attempt on the part of the National Forest Service to establish a more flexible, self-managing architecture that brings along with it the motivating and innovating forces of entrepreneurialism. Conclusions, recommendations and areas for further study make up the final chapter.

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II. FUNDING SCHEMES

A. DESCRIPTIONS

The current schemes or systems used to fund Navy repair activities are Mission Funding and Navy Working Capital Fund (NWCF).

1. Mission Funding

Mission Funding, also called Resource Management System (RMS), directly receives appropriated funds. It is a funding system whereby human resources, in the form of “Full Time Equivalent” (FTE) employees, are allocated to the repair activity at the beginning of the fiscal year, along with a contingency fund to serve for any overtime expenses as well as material costs. Under this system, estimates are made as to the amount of manpower needed for the next twelve months in order for that repair activity to accomplish the amount of repair work assigned to it for the coming year (its “mission”). Normally, no adjustments are allowed during the course of the year. Since the manpower has been pre-paid, the customers do not have to “buy” any of their services, but merely utilize them.

2. Navy Working Capital Fund

Navy Working Capital Fund, on the other hand, does not receive directly appropriated funds. It receives its money from customers who “pay as they go” to utilize the services of the repair activities. The Navy Working Capital Fund is a “revolving” type fund, which means that any of the funds that are left over at the end of the fiscal year are carried over to the following year. Deficits are also carried over. Because the Navy is not-for-profit, adjustments are made as to the rates charged to the customers for the following year. Thus, if the prior year showed a “profit,” called a “Net Operating Result,” the rate charged per man-hour would be proportionately reduced for the following year. Conversely, if the prior year showed a “loss,” or negative Net Operating Result, the man-hour rate would be proportionately increased the following year.

Regardless of which funding scheme is employed, material used for repair is billed separately at cost.

Because the customers use appropriated funds to pay for the work, they must budget for that work well in advance of performing it. The customer predicts what work will need to be done at the repair activity and plans for the resources required to perform that work at the adjusted (stabilized) price per man-day of labor almost two years prior to start of the work. In the case of a major refueling overhaul of an aircraft carrier, this can be as much as four to five years prior to the actual completion of the work.

The adjusted price per man-day is called the “stabilized rate” or “stabilized man-day rate.” The stabilized rate starts with an average of actual wages of direct labor. To this is added overhead costs, which include costs associated with the industrial facility and infrastructure, both physical and human, that are required to run the facility in the present state and to provide for growth and modernization for the future. On top of this is added or subtracted the Net Operating Result, as mentioned above. All of this is combined and averaged to be expressed in terms of a charge given to the customer for each direct labor hour of work done on their particular project.

B. HISTORY

Per report by Ken Collette, “Navy Working Capital Fund Overview,” May 10, 2002, NWCF has its roots in other industrial funds. The first of these, the Navy Industrial Fund (NIF), was used to fund Naval shipyards from 1949 to 1991. On October 1, 1991, NIF activities merged with [Defense Base Operating Fund] (DBOF). And on January 3, 1997, the Navy Working Capital Fund replaced DBOF. Also per Collette, throughout the changes in name, these industrial capital funds remained similar in concept, rules, and regulations.

One of the hopes of these funding schemes was that they could be used to set up an equitable competition with the private sector and would consequently lower the cost of ship maintenance. However in the mid 1990s, when the Navy decided that the Navy-owned shipyards were necessary as strategic assets in spite of not always being as competitive as the Private Shipyards, a “Guarantee Man-days” concept was introduced

that effectively ended a Naval Shipyard vs. Private Shipyard competition for Navy ship repair projects. The working capital type fund was thus no longer necessarily the only option and the door was open for a possible switch to another scheme such as Mission Funding.

C. PERFORMANCE MEASUREMENT

Performance of work at PSNS is measured by software called Performance Measurement and Control (PMC). Unfortunately, this software and the associated collection of data involve only “input metrics.” These metrics measure the amount of effort that goes into doing the work as compared to an estimate of that work figured by PSNS itself. It would seem better to measure the results of the effort to some sort of universal standard such as results achieved by others in the industry. Additionally, the “estimate” itself seems to be a controversial concept that has uses as well as abuses. The use of input metrics together with the lack of use of a universal standard for the honest measurement of results obviates any hope of obtaining meaningful baseline data for maintenance activity performance. Without an evident baseline, a comparison of performance output under each of the two funding schemes is beyond the scope of this paper.

D. COMPARISON WITH PRIVATE INDUSTRY

Since boundaries are inherently limiting, look for solutions outside the boundaries. – Steven Wolf, 1992

This section looks briefly at the question: What comparisons exist outside of the Navy for each funding scheme?

Unlike private industry, neither NWCF nor RMS is allowed to show a profit. NWCF, with its customer/service provider relationship, is closer to a not-for-profit corporation. Whereas RMS, with its pre-paid labor, is closer to central managed labor [popular in eastern European economies prior to 1989, and in the southern US prior to 1863]. In either case, it could be said that the workers who help defend free enterprise do not participate in it.

Interestingly enough, although NWCF was supposedly set up to mimic private industry, it has been suggested that in comparing both Mission Funding and NWCF with that of a very large manufacturing corporation such as General Motors, Mission Funding would be found to be more similar. The large car manufacturer will have hired a more or less permanent workforce to produce production runs for the current and future model years. The workforce is “Mission Funded” in that they are not responding to any specific customer, they are making cars, one after the other, until the end of the production run, after which, they will start on the next one.

NWCF may compare more closely with the accounting and billing system used at an engineering consulting firm such as Art Anderson Associates of Bremerton, WA. A worker’s time at the consulting firm is billed to the particular customer whose job has been performed by that worker during that time. A further similarity is that in NWCF as well as the consulting firm, overhead costs are figured into the customer’s bill by a formula based on the number of hours a worker has worked directly on that customer’s job.

One argument for promoting NWCF has been that it would bring free market forces to bear in causing the Navy maintenance facilities to improve their efficiency. It is true that in NWCF a relationship of customer-to-provider is established, and this is necessary for a “free market” enterprise. But it is not sufficient. The thing that makes the “free market” free is missing. Neither the customer nor the provider is free to make a choice. There is only one provider and only one customer, whereas at Art Anderson Associates at one time there were so many customers that no more than 10 percent of the total workload came from any one of them. At Navy maintenance facilities 100 percent of the workload comes from only one customer, the Navy. Conversely, whereas the customers of Art Anderson Associates have many choices for service providers other than Art Anderson Associates, the Navy must (with some exceptions) utilize the Navy maintenance providers. Since there is no freedom, free market forces do not, have not, and will not come to bear.

III. THE ARCHITECTURE OF NAVY SHIP MAINTENANCE

If you don't understand the existing system, you can't be sure you're re-architecting a better one. – Susan Ruth, 1993

In a world of continual strategic adjustment, flexible organization is an advantage. The current organizational structure may provide focus and be aligned with today's strategy. But the current structure also constrains future strategy. The structure influences the type of information that is collected from the environment. It influences how that information is processed and how it is factored into the new strategy determination. If a company has voices articulating issues for businesses, countries, markets, and functions, it is more strategically flexible and responsive. Multidimensional structure is an advantage if it is aligned with multidimensional strategy and if the differences can be managed. – Galbraith, Jay R., *Competing with Flexible Lateral Organizations*, 2nd ed., Addison-Wesley, 1994.

A. INTRODUCTION

The system by which the Navy in the Northwest Region accomplishes maintenance on its ships has an architecture that may affect its performance. This chapter lays out the system architecture of Navy ship repair in the Northwest region and compares recent changes to that architecture that were facilitated by a change in funding scheme. The architecture will be shown first in a pre-merger state and then in the current state of having one regional maintenance commander and one funding scheme. Alignment within the original and changed architectures in will be discussed. This chapter also briefly touches on an interim attempt at centralizing the function of repair of components.

B. BACKGROUND

Maintenance on U.S. Navy ships in the Northwest Region is done at three different Navy facilities and at more than one private facility. The locations of the three Navy facilities are Bremerton, Bangor, and Everett, Washington. The major private

shipyard is located in Seattle. Until recently, operations at these facilities were accomplished by four different Navy organizations, each with its own funding sources and each taking its direction from different commanders, at least one of whom was headquartered outside of the region. Although the overarching technical requirements for the ships and equipment being maintained were identical and originated from the same basic technical authority, each organization had its own maintenance concept. The four organizations were Puget Sound Naval Shipyard (PSNS); Trident Refit Facility (TRF), Bangor; Shore Intermediate Maintenance Activity (SIMA), Everett; and the Supervisor of Shipbuilding and Repair (SUPSHIP), Puget Sound.

As to the differing maintenance concepts, PSNS used a concept required to perform very complex overhauls taking up to a year or more, called “depot level” or “D-level” maintenance. Depot maintenance is accomplished in four phases: “removal,” “repair,” “replacement,” and “test.” Access holes are often cut in the ship to allow major components to be removed. Entire systems are shut down while major portions of the system are removed for refurbishment. Depot maintenance usually includes dry-docking the ship to accomplish propeller and shaft work as well as hull preservation and the overhaul of components that are integral with the hull.

SIMA used a combination of breakdown maintenance and continuous maintenance whereby individual components are removed and repaired based on their actual condition. This is also referred to as “intermediate maintenance.” Systems are only partially isolated for discrete component removal or in-place repair. Hull cuts are generally not required for this level of maintenance.

TRF used a maintenance concept especially created as an integral part of the Trident submarine product development whereby Trident submarines had been specifically designed to receive carefully engineered incremental maintenance during three-week maintenance periods, called “refits,” which occur after each patrol. Refits have some qualities of the depot maintenance concept as well as some qualities of the intermediate maintenance concept. Access trunks and shipping routes had been designed into the architecture of the Trident submarines such that all components are easily and quickly removed without disruption to other systems and without cutting the hull.

Removed components are immediately traded for like components that have previously been refurbished and warehoused for this purpose. Typically, only portions of systems are shut down for component swapping or for in-place maintenance. The submarines were dry-docked at TRF. These dry-dock periods, called “extended refits,” were much longer than regular refits but not nearly as long as the depot level dry-docking availabilities at PSNS.

SUPSHIP performed maintenance on ships by means of contracts with private shipyards and other private specialty shops. Since these contracts ranged from very specific repair on a single ship to depot level multi-year, multi-ship contracts, SUPSHIP was involved in both depot level as well as intermediate level maintenance.

The four activities also had different major customers. SIMA and SUPSHIP served surface ships with the intermediate maintenance being provided by SIMA and the depot work going to SUPSHIP. PSNS had mostly aircraft carrier depot work (aircraft carriers have on-board shops where some of the intermediate level work is accomplished). TRF had the responsibility for maintaining all of the submarines homeported in the northwest.

As will be shown below, the maintenance activities used the same trade skills and some of the same specialized shops to overhaul components removed from the ships and submarines. The Navy recognized this duplication as an opportunity to try to reduce costs. And so to reduce these redundancies, in 1994 the several maintenance organizations were directed to establish a single site for each type of component overhaul. These sites were to be called “Regional Repair Centers” (RRCs). However, the set up and operation of these RRCs proved to be very difficult due in a large part to the incongruence of the financial system as well as in part to the remoteness of and to the relative echelon of the common command (i.e., the Chief of Naval Operations). With no overall commander in the region, questions of the selection of the sites to locate each RRC, questions as to who would control of the schedule and priority of work at each RRC, questions of exactly which component types were to be serviced by an RRC, questions about the manning and financial contribution from each activity, and finally, questions about what would become of the facilities that would become surplus were all

left to the several activities to sort out using a collaborative approach. Needless to say, collaboration around such a complex set of questions would have been next to impossible. And so, an ad hoc office, the Northwest Regional Maintenance Coordinator, was set up to facilitate the process. Nevertheless, progress was extremely slow and only a few regional repair centers were ever established in the Northwest. This lack of success was due not only to the differing interests of the individual activity commanders, but also to a compounding effect of the differing interests of the higher echelon commands to which each individual activity commander reported.

The regional repair centers that finally were established operated, during this period, under an odd combination of mission and working capital funding. The fact that there were different funding schemes in the contributing activities required that the regional repair centers operate under specifically created business rules and accounting systems. This created a cumbersome situation with extra effort required by the business offices of each contributing activity as well as direct involvement of the Northwest Regional Maintenance Coordinator with a special funding line from Pacific Fleet. Since the RRCs were the result of collaboration, the personnel manning the RRCs came from the several repair activities in the region. These personnel maintained their administrative ties to their parent organizations. The funding of work was similarly complex, with pre-pay schemes having to be collaboratively agreed upon by the three major customers: Commander Naval Air Forces Pacific (AIRPAC), Commander Submarine Forces Pacific (SUBPAC), and Commander Naval Surface Forces Pacific (SURFPAC). The pre-pay schemes included, for AIRPAC, straight funding from through the NWCF and for SUBPAC, a provision of man-hours worked by Mission-Funded employees. SURFPAC used a combination of the two pre-pay schemes. On top of these pre-pay schemes, there was also included a stiff surcharge imposed by NAVSEA on some of the work done at the RRCs hosted by PSNS. In order to deal with this added complexity, the system architect (Northwest Regional Maintenance Coordinator) was inserted into the system operation at the interfaces of the RRC and the maintenance activities to regularly monitor personnel changes and funding flow (often supplementing it).

Another compromise, in keeping with the collaborative nature of the RRCs, was that they were “hosted” by the activity at which they resided. They were provided services, such as crane service, transportation, and any required engineering services by their “host.” Sometimes this even included services of outside contractors with whom the host activity was accustomed to doing business. This dependence on the host activity for services coupled the RRC system to the host system. Along with this dependency upon the host system’s services came the host system’s internal complexities, which often served to hold the RRC processes and schedule hostage to the processes and schedule of the host. An example of this is one time when a major crane was out of service at the Electric Motor RRC. The RRC process and schedule had to wait for the crane repair and certification schedule of the host activity before it could resume its normal processing flow.

Problems with such convoluted funding and “hosting” gave the Navy further incentive to pursue the goal of combining maintenance resources. And so, in parallel to the effort to continue to establish RRCs, the Navy sought to achieve more efficiency by merging the four activities into one. The first step in this direction was taken in 1997 when SIMA Everett was subordinated under the command of TRF. The combined organization became the Intermediate Maintenance Facility (IMF) Pacific Northwest. An officer-in-charge was retained at Everett, forming IMF detachment Everett. This allowed the elimination of some duplicate overhead functions at Everett such as personnel and travel. Other than that, and some reporting chain changes, few efficiency gains resulted, but it was a step in the right direction. A merger of PSNS with IMF would be the next step.

Although the next step didn’t come until six years later, when it came, it came quickly. At the beginning of 2003, the Northwest was finally able to get down to one funding stream. This was a key event because due to the difficulties of operating under dual funding, as exhibited by the operation of the RRCs under dual funding, it was decided that merging PSNS with IMF could only take place only when both came under the same funding scheme. With the issue of Program Budget Decision 700 (PBD 700) in January 2003, the Department of Defense allowed the Navy to run a two-year pilot using

Mission Funding for one of its shipyards on the continental US. For this pilot PSNS was chosen. With this conversion to Mission Funding the greatest barrier that had prohibited PSNS from merging with IMF was eliminated. And so, shortly after PBD 700, effective May 15, 2003, direction was given to merge PSNS with IMF by directing the IMF Commanding Officer to report to the PSNS Commander. The new command was named PSNS&IMF. Lastly, direction was given to add SUPSHIP Puget Sound into the one northwest regional maintenance organization.

Effective October 1, 2003, the SUPSHIP Commanding Officer also reported to the Commander of PSNS&IMF. In this new responsibility, the Commander of PSNS&IMF added the title of Northwest Regional Maintenance Commander.

Thus, in the span of about ten years, the northwest regional maintenance system went from four separate commands under two funding systems, through a transition period of establishing RRCs using a dual funding system, to a single merged command under a single funding scheme.

C. THE ARCHITECTURE

1. Introduction

In this section the Northwest Maintenance System will be presented and analyzed. A system of this type can be analyzed by laying out its architecture. The architecture is laid out in different views. Each view represents a different aspect of the architecture. The views taken together are meant to give a more complete picture of the architecture. In this case the views presented are: Functional, Command Structure, Organizational, Informational, Physical, and Financial. The way in which these views fit together, or are aligned, is of particular interest; for it would seem intuitive that the better the alignment is, the better the system would perform. And so, additional layouts are used to study these alignments. Because the Northwest Maintenance System underwent changes, it will be shown in its three phases: 1) the pre-merger state showing the original system of four commands, 2) the special system set up for the RRC concept, and 3) the post-merger state showing a single overall commander with a single funding stream. Changes made to

the system in the different phases will be analyzed using the changed architectural views to try to determine whether or not alignment is improved and whether hoped-for improvement in overall system performance is more or less likely to occur.

2. Pre-Merger Architectural Views

The Pre-Merger Functional View (Figure 1) shows how maintenance was thought of as something that needed to be separated by ship type, Surface, Submarine, or Aircraft Carrier. Each type has similar functional maintenance level, intermediate, depot, and down to the overhaul of individual components. Note that individual components are overhauled at both the intermediate maintenance level as well as at the depot level.

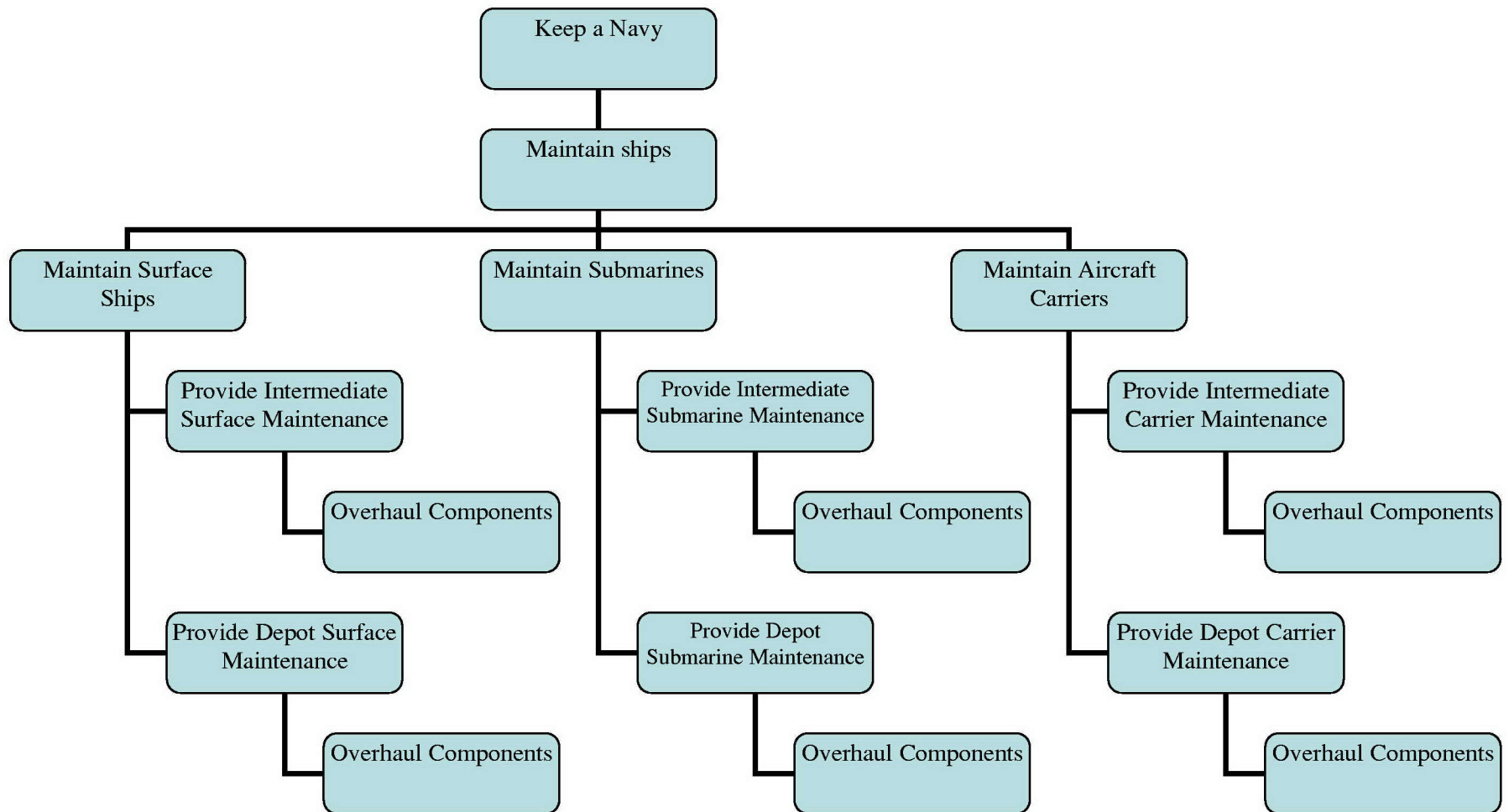


Figure 1: Pre-Merger Functional View of Ship Maintenance Architecture

Figure 2 shows the pre-merger command structure. It shows how the common link in the chain of command was positioned all the way up at the Chief of Naval Operations. The commanders of the maintenance activities reported to different commands. PSNS and SUPSHIP reported to NAVSEA, SIMA reported to the Pacific Surface Forces (SURFPAC) chain of command, and TRF reported to the Pacific Submarine Forces (SUBPAC) chain of command. Note how it generally follows the idea of separation of maintenance by ship type. This will be illustrated more thoroughly in the analysis section that follows.

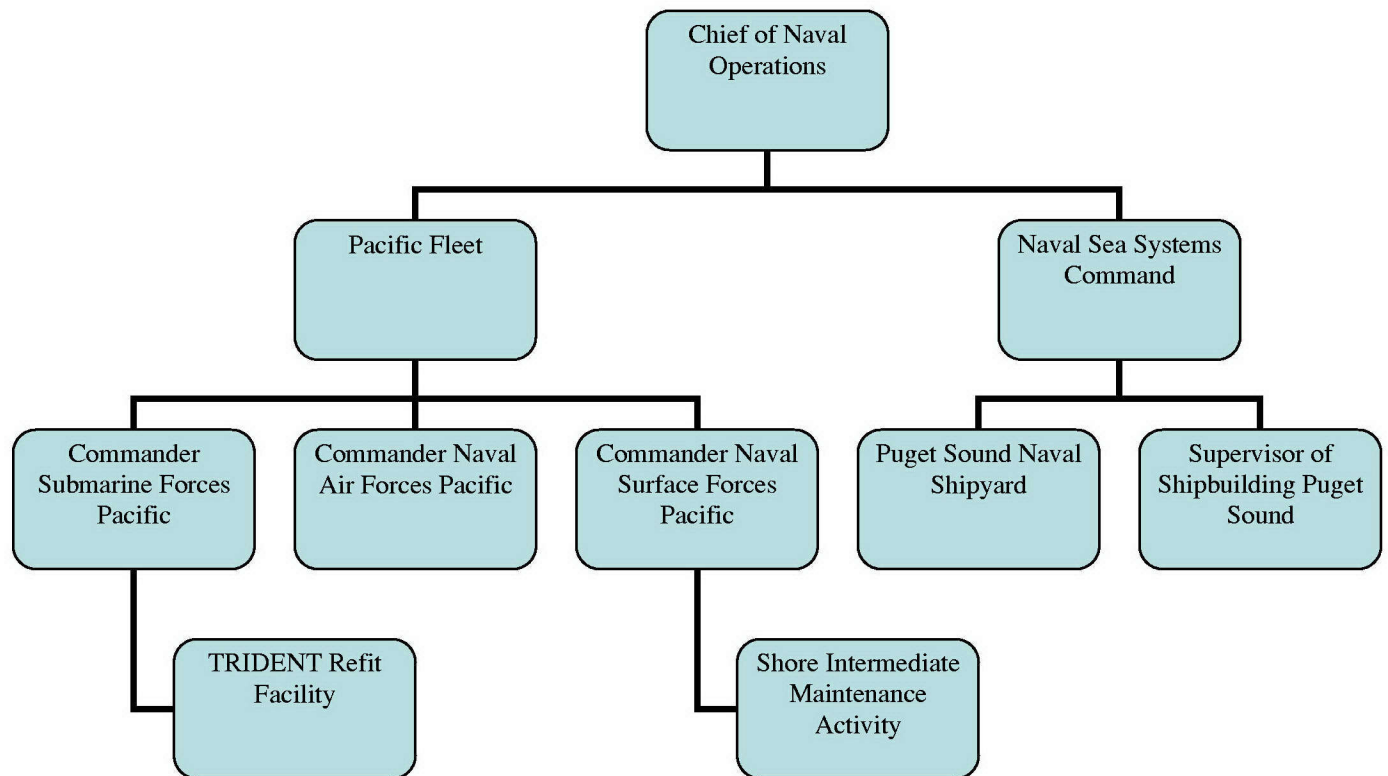


Figure 2: Pre-merger Command Structure

Pre-merger funding flow, shown in Figure 3, fairly well follows the chain of command. Again, maintenance funds flow to particular organizations along the lines of ship type:

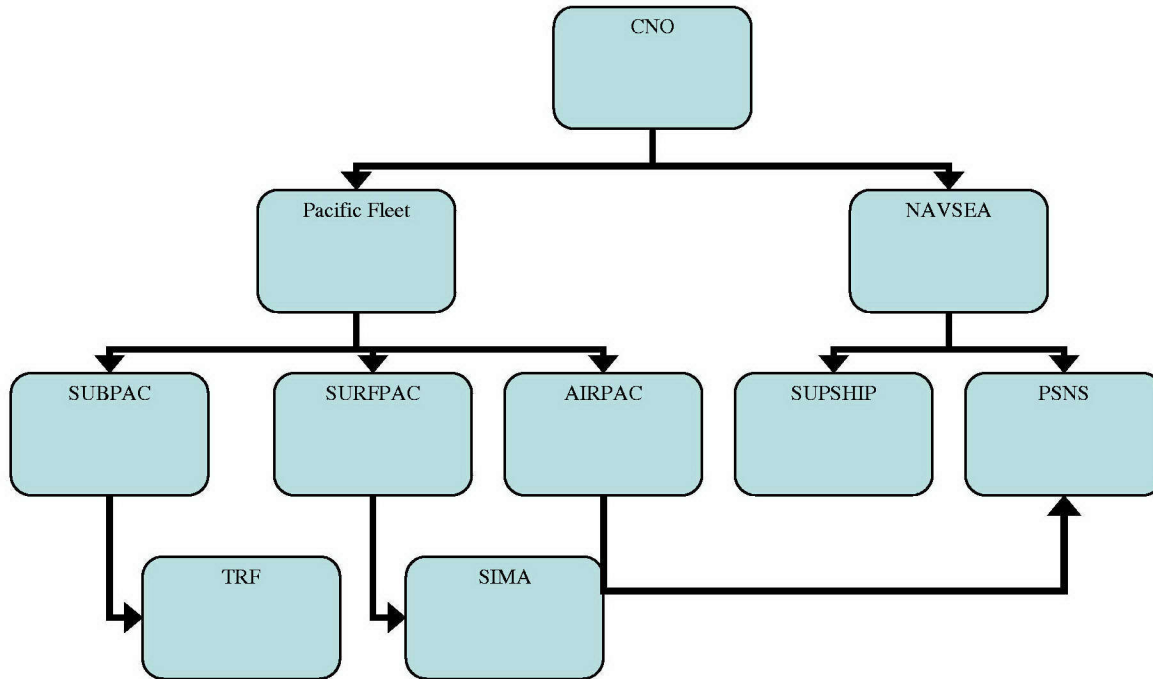


Figure 3: Pre-merger Financial Architecture (arrows indicate funding flow.)

Organizationally, Regional Maintenance can be decomposed as follows:

At the top, there was no one office in charge within the region. The top level in the region was therefore composed of the four individual activities themselves represented by their four commanding officers. The four activities were aligned by product orientation – the product in each case being a particular maintenance concept each fulfilling a different need for a specific customer – thus making them customer/product oriented. The pre-merger organizational views are shown in Figures 4 through 7 for each separate command. Note the similarities. Each organization has its own business office and production resources department. Within the production resources department each has an organizational level that represents general trades division. Under “Electrical” the “Motor Repair” section is shown to this level of detail merely for example to be used in typifying the establishment of

the Regional Repair Center concept. These organizational views have been simplified for the purpose of this analysis and do not try to represent the total complexity of each of the naval activities under discussion.

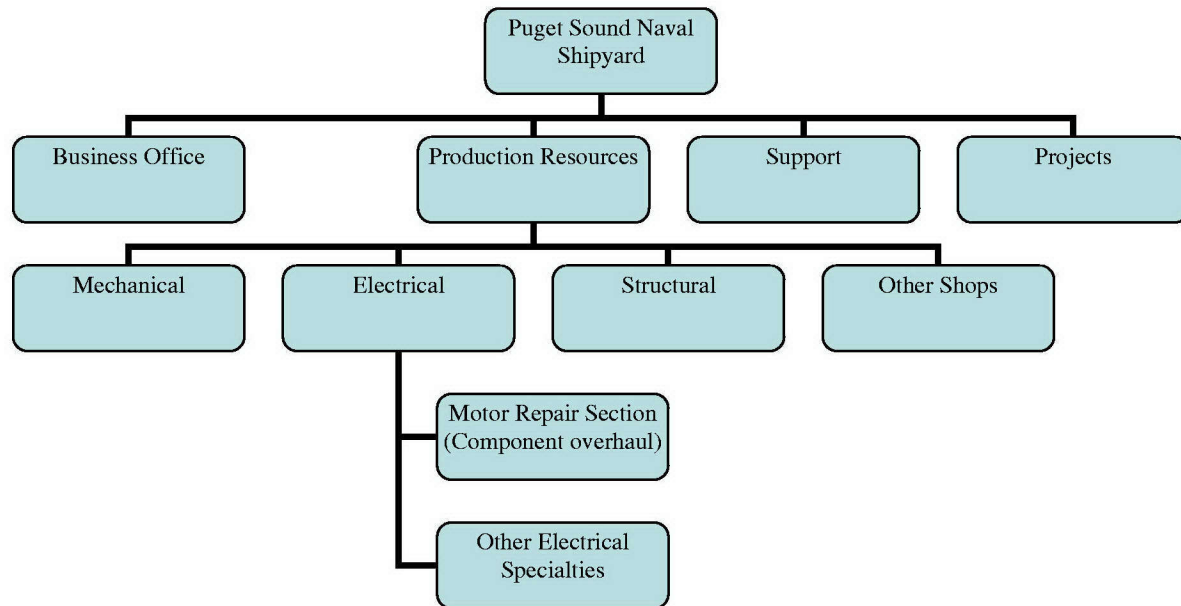


Figure 4: Simplified Organizational View of Puget Sound Naval Shipyard

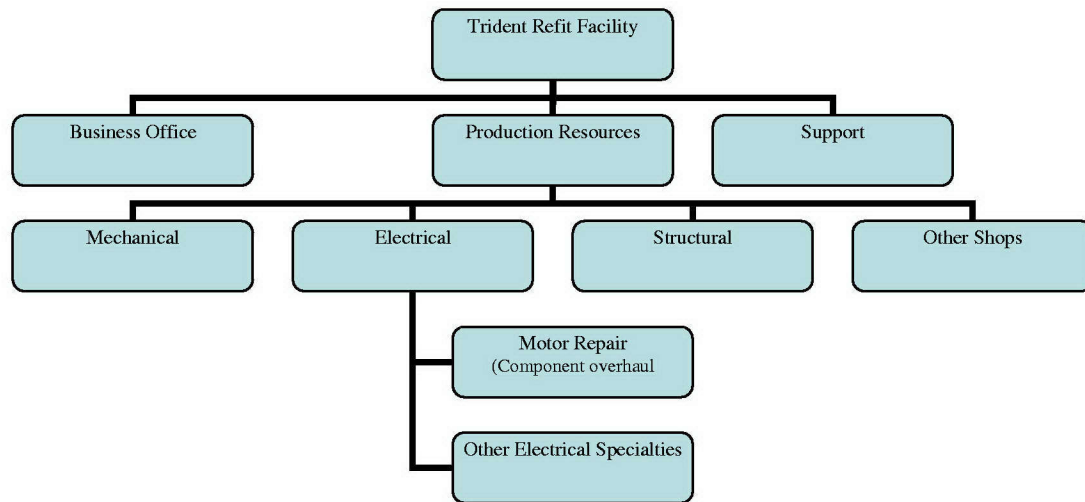


Figure 5: Simplified Organizational View of Trident Refit Facility

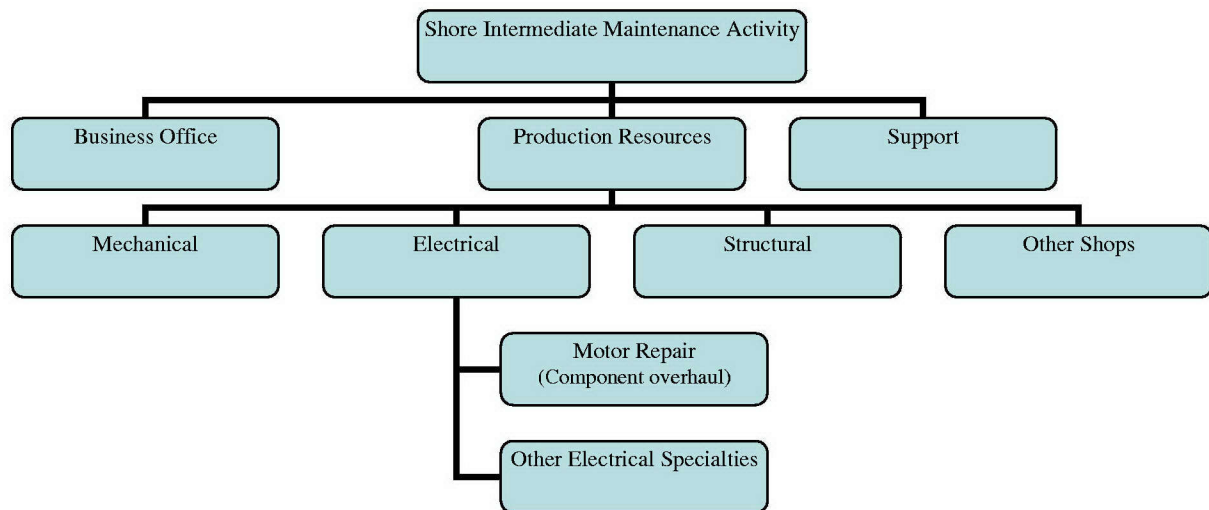


Figure 6: Simplified Organizational View of Shore Intermediate Maintenance Activity

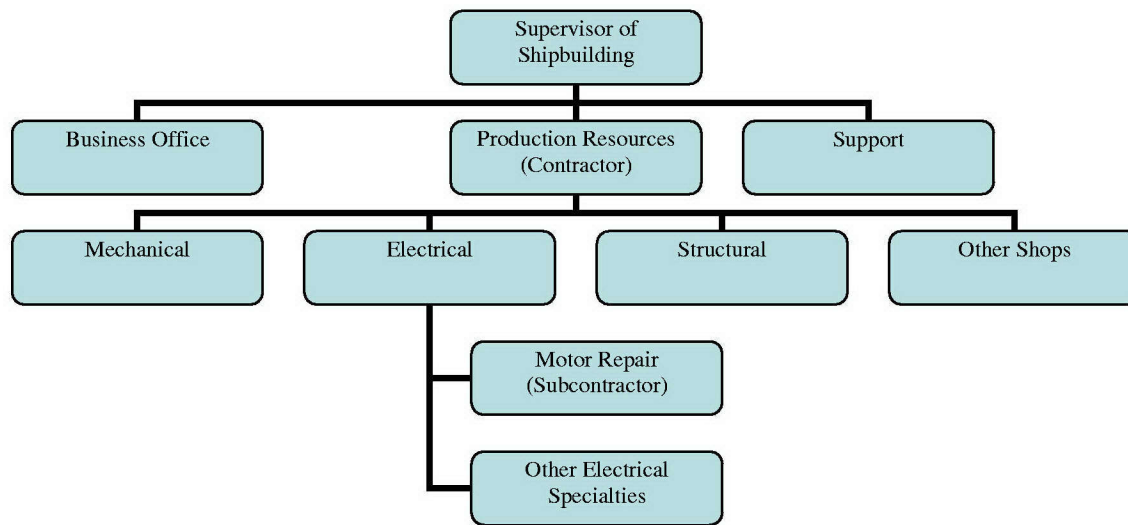


Figure 7: Simplified Organizational View of Supervisor of Shipbuilding Puget Sound

3. Analysis of Pre-merger Views

In the analysis of the pre-merger views one view is mapped to another. The alignment of the elements or lack thereof is noted and discussed. In Figures 8, 9, and 10, the Pre-merger Functional View, Figure 1, has been broken out into separate legs according to ship type. On the same figures, the Pre-merger Command Structure is similarly broken out. Finally, the funding flow for the particular ship type (from Figure 3 above) has also been superimposed on each command structure leg. The elements of the functional view are then mapped to the corresponding elements of the command structure.

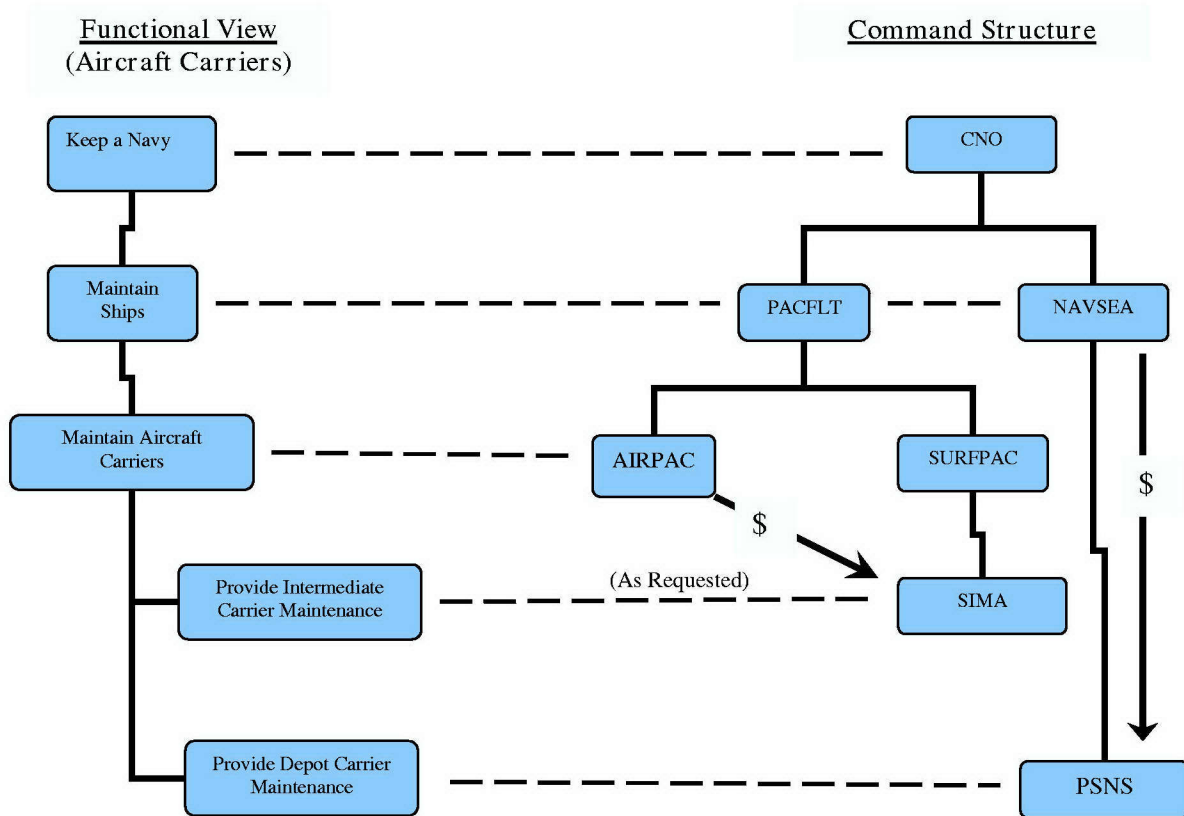


Figure 8: Pre-merger Alignment of Functional View with Command Structure for Aircraft Carriers

Note funding flow as shown by (\$)

Note in Figure 8 how the funding flow as well as the command structure follows both the NAVSEA leg as well as the PACFLT leg. Also, the function of maintaining aircraft carriers is split between PACFLT and NAVSEA as well as between AIRPAC and SIMA, which is under SURFPAC in the command structure. Funding must be transferred from AIRPAC to SIMA for accomplishing intermediate maintenance function. With dual responsibility for functions, and funding taking multiple paths, this mapping shows that some streamlining could be done.

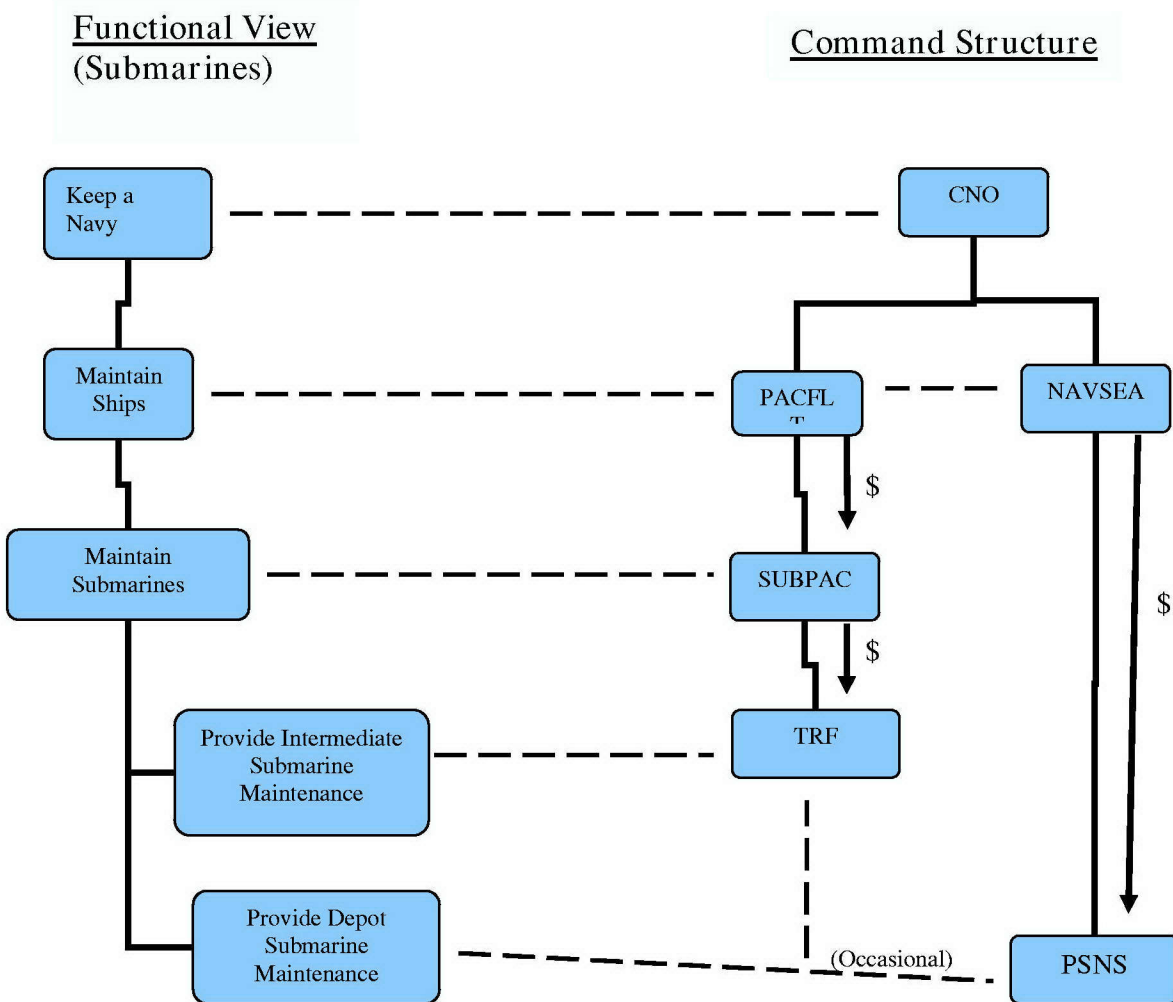


Figure 9: Pre-merger Alignment of Functional View with Command Structure for Submarines

Note that funding flow follows command structure

In Figure 9, maintenance of ships is still split between two legs of command, but funding does not cross between type commanders.

Functional View (Surface Ships)

Command Structure

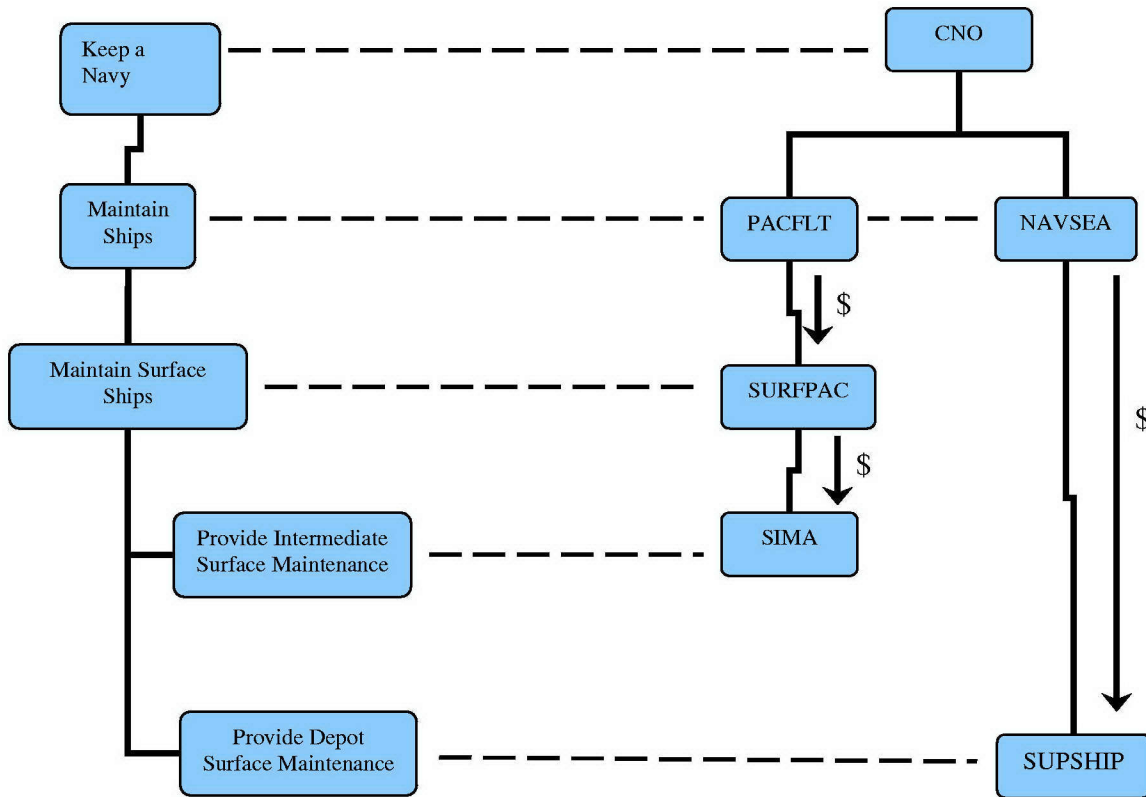


Figure 10: Pre-merger Alignment of Functional View with Command Structure for Surface Ships

Note that funding flow follows command structure

Figure 10 is similar to Figure 9 in that command and funding flow is streamlined but still down two legs of command structure.

The following three figures show the individual activities mapped against the functional view, again broken out by ship type. Here the figure that shows the most congruence is Figure 12, where the function of maintaining submarines is accomplished by a single organization. Left off of Figure 12 for simplicity is the fact that occasionally, PSNS is

used to assist in some depot maintenance when an overhaul of unusual complexity and duration is scheduled (see Figure 9 above). Figure 12 also gives preview to the fact that “overhaul components” function can be handled by the same facility whether the function is intermediate maintenance or depot maintenance. Figures 11 and 13, on the other hand, each show one organization associated with the function of providing intermediate level maintenance while a completely separate organization is associated with the function of providing depot level maintenance. Again, notice how the function of overhauling components such as electric motors is duplicated by all of the organizations

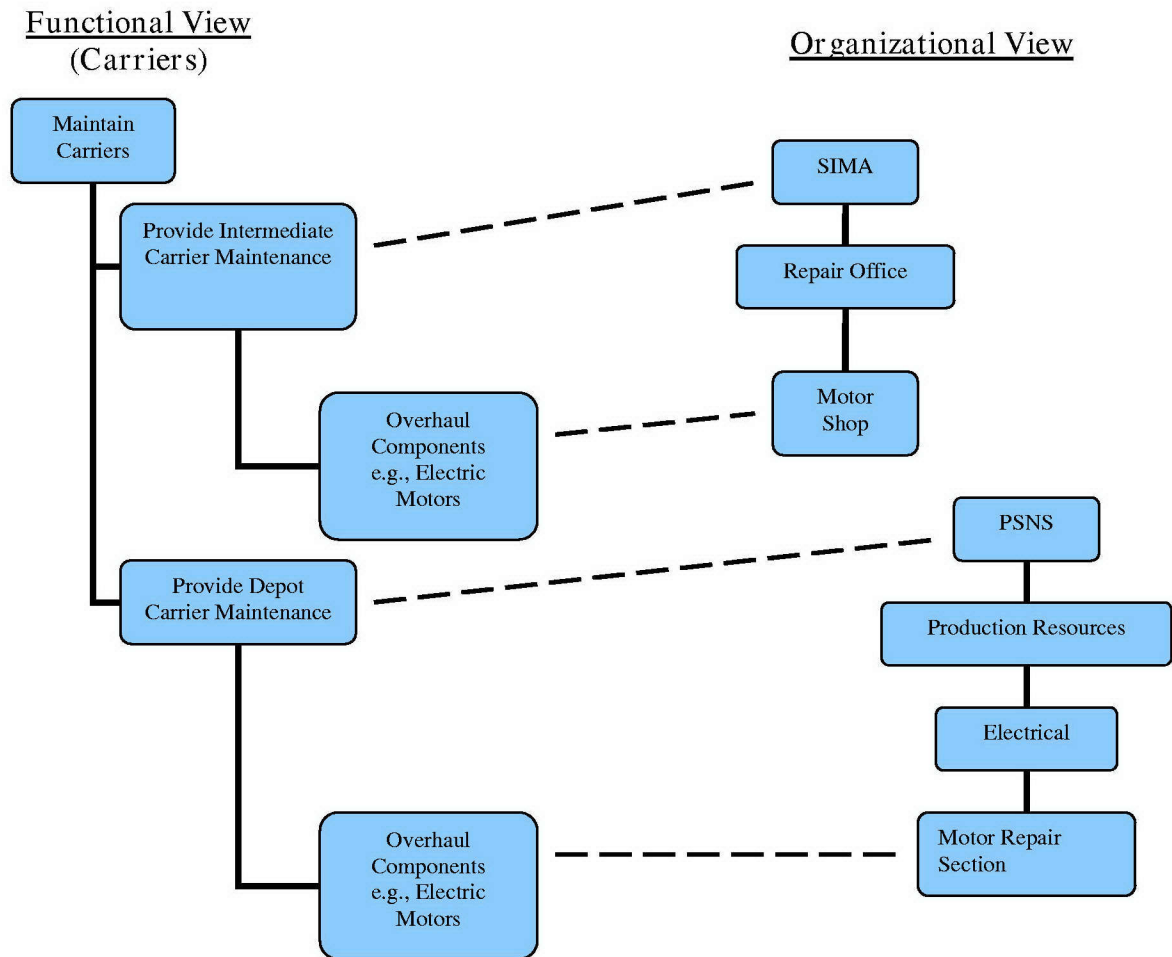


Figure 11: Pre-merger Alignment of Functional View with Organizational View (Aircraft Carriers)

Functional View
(Submarines)

Organizational View

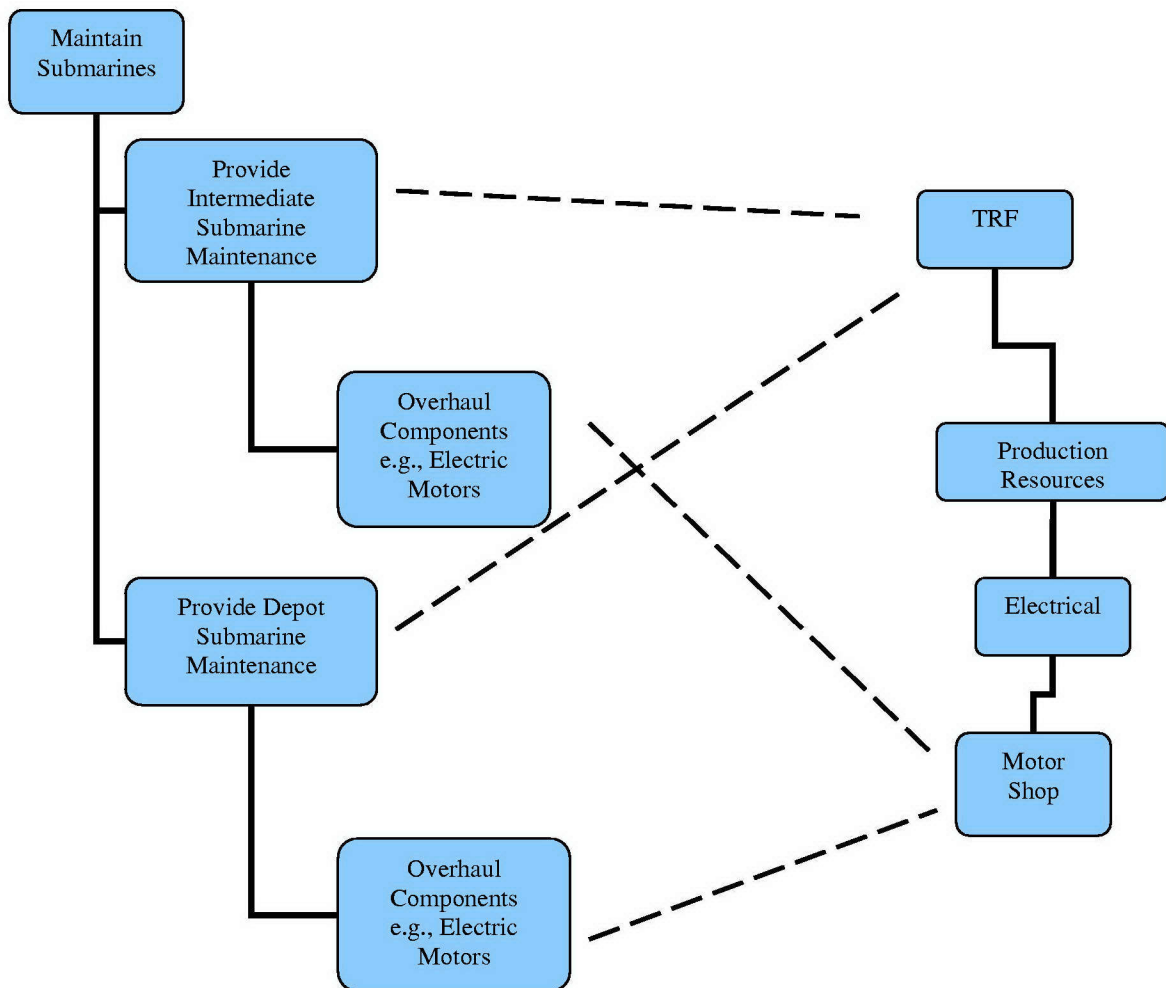


Figure 12: Pre-merger Alignment of Functional View with Organizational View
(Submarines)

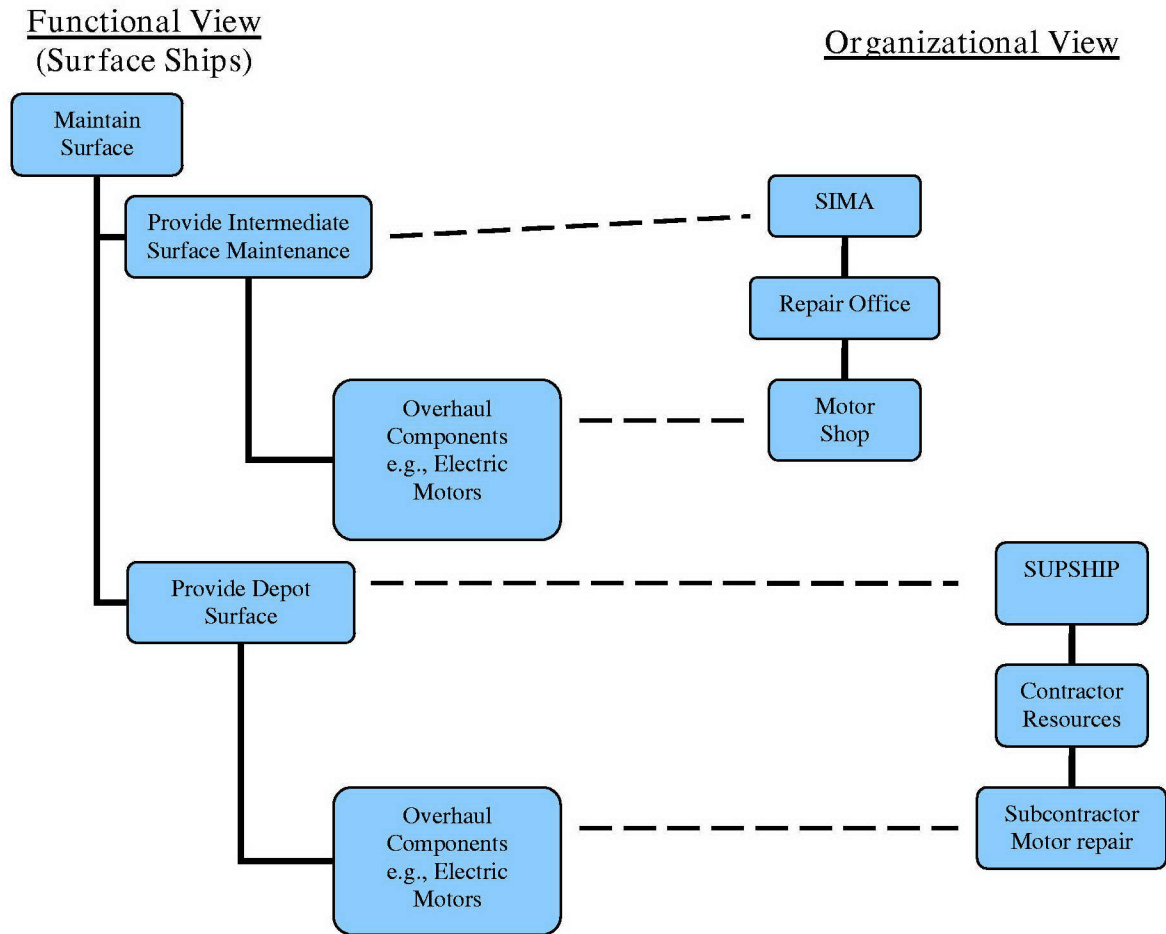


Figure 13: Pre-merger Alignment of Functional View with Organizational View (Surface Ships)

4. Transition: the Regional Repair Centers

A simplified view of the Physical System is shown in Figure 14. It is the system of facilities and equipment required to fill the functions of Navy ship maintenance. The figure is laid out to illustrate the duplication of facilities that exist among the several activities. Again, special detail has been given to the motor shop as an example of the importance regional repair center concept. No values are given for the number of contractor facilities

because both the number of qualified contractors and the availability of their facilities at any given time is subject to variation.

<u>PSNS</u> Bremerton	<u>TRF</u> Bangor	<u>SIMA</u> Everett	<u>Contractors</u> (Seattle, Portland, etc.)
6 Dry Docks — — —	1 Dry Dock — — — — — — — — —		Dry Docks
10 Piers — — — — —	2 Piers — — — — —	2 Piers — — — — —	Piers
Structural Shops — — —	Structural Shops — — —	Structural Shops — — — — —	Structural Shops
Mechanical Shops — — —	Mechanical Shops — — —	Mechanical Shops — — — — —	Mechanical Shops
Electrical Shops — — —	Electrical Shops — — —	Electrical Shops — — — — —	Electrical Shops
Including Motor Repair Shop — — —	Including Motor Repair Shop — — —	Including Motor Repair Shop — — — — —	Including Motor Repair Shops

Figure 14: Physical Systems Showing Duplicate Components but Different Locations

It must be noted that due to the number of ships in the Northwest and the amount of time each must spend either in a dry dock or at pier side, it would be difficult at this time for the Navy to eliminate any of the duplicate piers or dry docks without taking the total fleet of Navy ships and total number and location of shore facilities into consideration. However, below that level, the shops, and especially the sections that accomplish component overhaul, such as electric motor repair, could be considered for consolidation and subsequent elimination of surplus.

As mentioned above, during a transition period prior to the merge of commands in the Northwest, regional repair centers were set up in an attempt to eliminate duplicate shops that overhauled certain components. In Figure 1, it can be seen that the function, “Overhaul components,” is common to all ship types and to both levels of maintenance. Here again it must be remembered that for any one type of component, the same trade skills and the same types of repair equipment are utilized whether it be for a surface ship, a submarine, or an aircraft carrier. Also, it doesn’t matter whether the ship is in intermediate maintenance or

depot level maintenance, the requirement to overhaul a component can occur during either and the overhaul process is the same. ¹

The set up of the RRCs is shown in Figure 15, which compares the functional view with the organizational view of the architecture. It takes into account that some of the RRCs were located at TRF, others were located at PSNS, and none were located at SIMA, and takes into account the ship type the component belongs to. The particular RRC at which a component is overhauled depends on what the component is. For example, because the RRC for electric motor overhaul was at PSNS, all electric motors to be overhauled within the Northwest would be taken to PSNS. Similarly, the RRC for air compressors was at TRF, and so all of the air compressors to be overhauled would be taken to TRF. The system was not entirely closed as shown in Figure 15, and for various reasons some equipment, particularly that belonging to surface ships, was sent to private contractors for overhaul even though there were RRCs able to do the job.

¹ There are differences in quality acceptance procedures particularly for certain submarine and certain nuclear propulsion related components. Although this has also required certain worker qualification differences, the trade skills used in component overhaul remain basically the same.

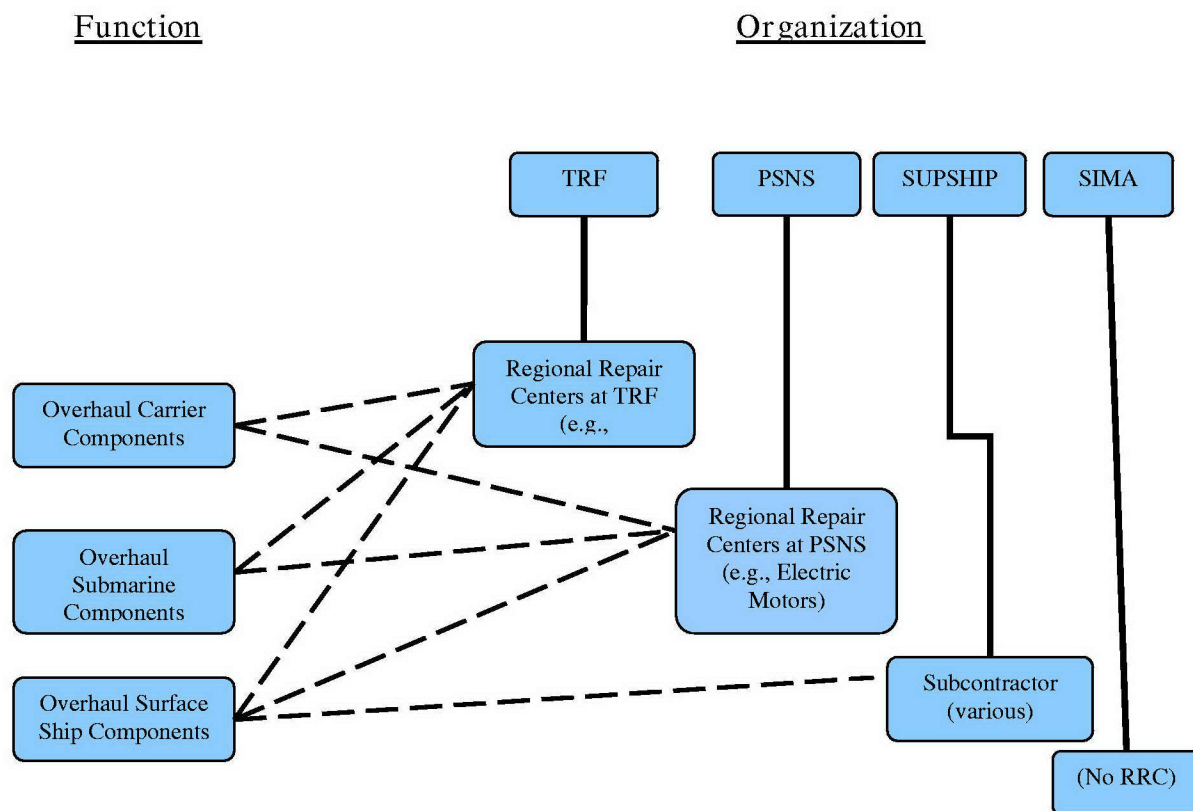


Figure 15: Pre-merger Alignment of Regional Repair Centers with Component Overhaul Function

Complexity in funding flow was mentioned above as one of the difficulties encountered by the operation of RRCs at this period. Figures 16 and 17 show the indirect flow that was used to make up for the fact that with the RRCs, function, command structure, organization, and funding flow were not in alignment.

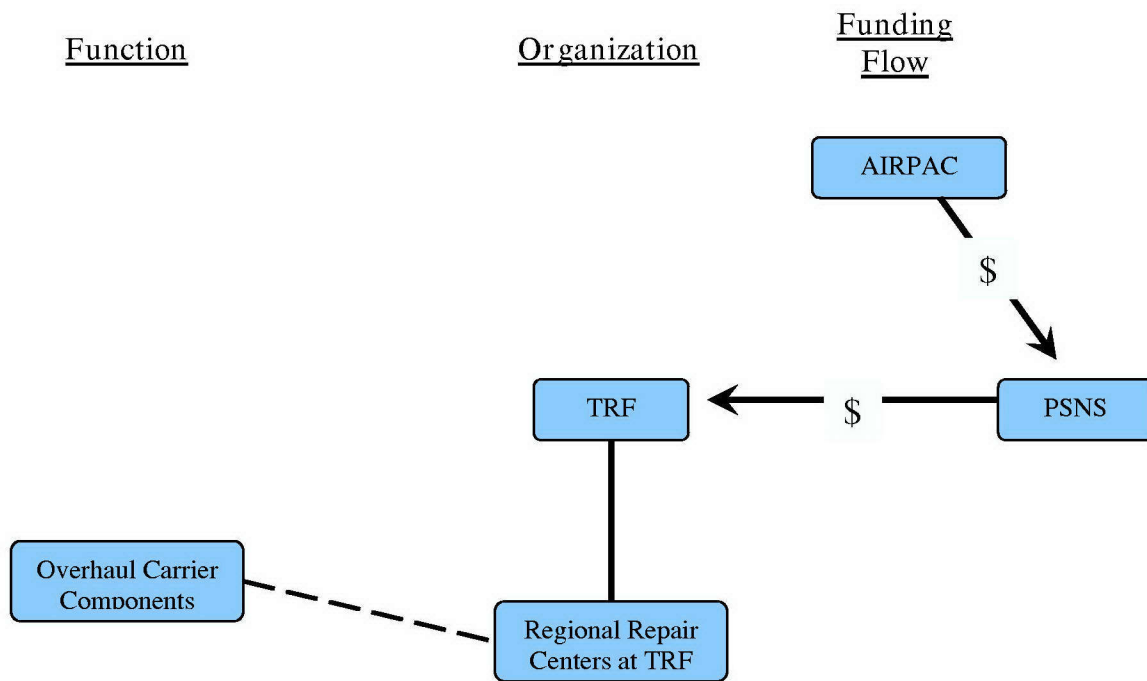


Figure 16: Relation of Carrier Funding Flow with Regional Repair Centers at TRF

Figure 16 shows funding flow for aircraft carrier component repair using the RRC at TRF. In this case AIRPAC pays PSNS for depot level work. In the course of this work PSNS removes a component and sends it to the appropriate RRC (at TRF in this case) for overhaul. PSNS then reimburses TRF for the man-hours expended in this effort₂.

₂ TRF, being Mission Funded, had a set number of employees to meet its mission. Any work done outside of that mission required extra workers. These extra workers were paid for by receiving reimbursement from the customer requesting that work.

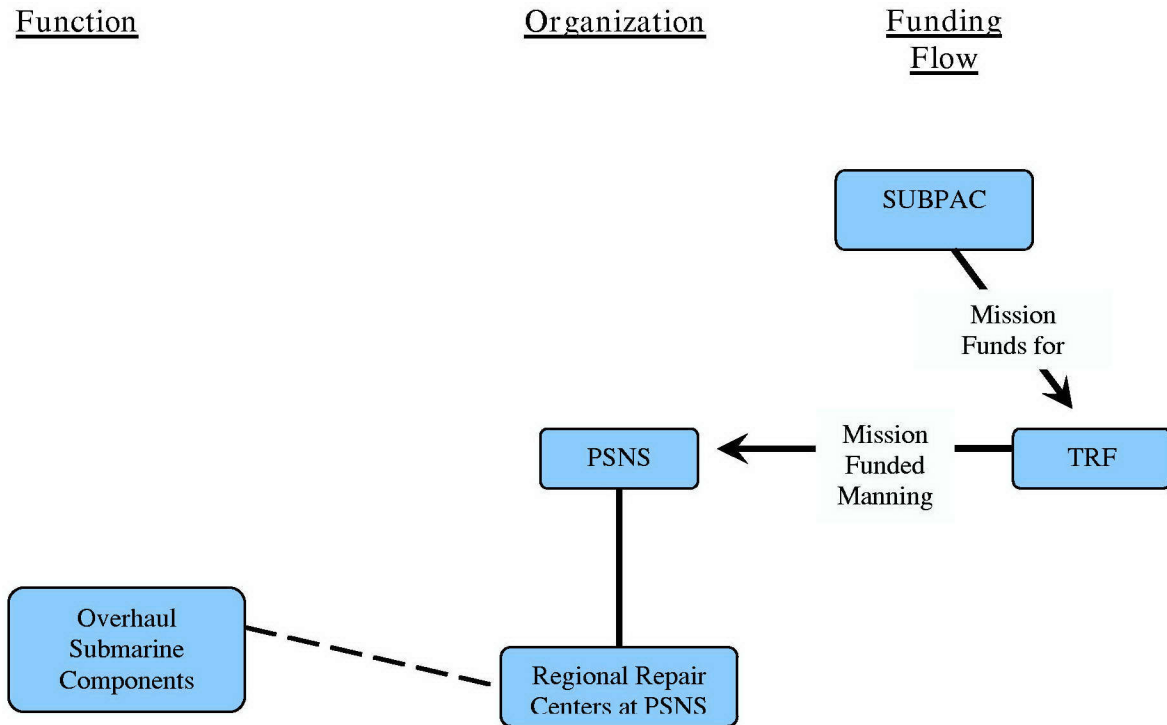


Figure 17: Relation of Submarine Funding Flow with Regional Repair Centers at PSNS

In Figure 17, submarine component work is shown. This work was part of TRF’s mission for which mission-funded employees were provided through funding by SUBPAC. However, the RRC for the particular component is hosted by PSNS. Payment in this case takes the form of TRF providing appropriate Mission Funded mechanics to work in the RRC at PSNS. Since it was impractical for TRF employees to only work on submarine components, all workers at the RRCs worked on all components that came to the RRC. At the same time, careful records were kept to make sure that the amount of submarine work done at an RRC hosted by PSNS was commensurate with the number of TRF employees working at those RRCs.

5. Post-Merger Architecture

As mentioned above, between 1997 and 2004, the four separate maintenance organizations in the Northwest have merged into one. With the new organization, as shown in Figure 18 below, there is alignment of command within the region where all report to one commander for maintenance. He is now the only one who directly reports to a command outside of the Northwest region. This should end conflicting input from the outside to the commands within the region and consequently eliminate many of the roadblocks to consolidations in the organizational and physical aspects. Thus, selection of sites for regional repair centers, control over the schedule of work, and determination of surplus facilities should all proceed smoothly and logically from now on.

With the three type commanders now all having to deal with the one commander for all maintenance in the region, they are forced to cooperate in deciding project priorities. This has added another dimension in flexibility in that the type commanders can not only rearrange ships' maintenance packages within a particular availability, but they can also move the availability once they are convinced of the importance of the schedules of other type commander's ship maintenance schedule to the overall good of the Navy. They do this through a formal organization, the Local Board of Directors (LBOD). The Pacific Fleet Maintenance Officer chairs the LBOD and has the power to break any impasse that could occur within the LBOD.

While the LBOD provides oversight over the *operations* of the Northwest regional maintenance organization, there is another team that provides oversight over its *architecture*. This team is called the Maintenance Integration Oversight Team (MIOT). It is co-chaired by the Pacific Fleet Maintenance Officer and the NAVSEA Deputy Commander for Logistics, Maintenance, and Industrial Operations. The MIOT meets monthly and monitors the progress of the maintenance activity in re-structuring itself.

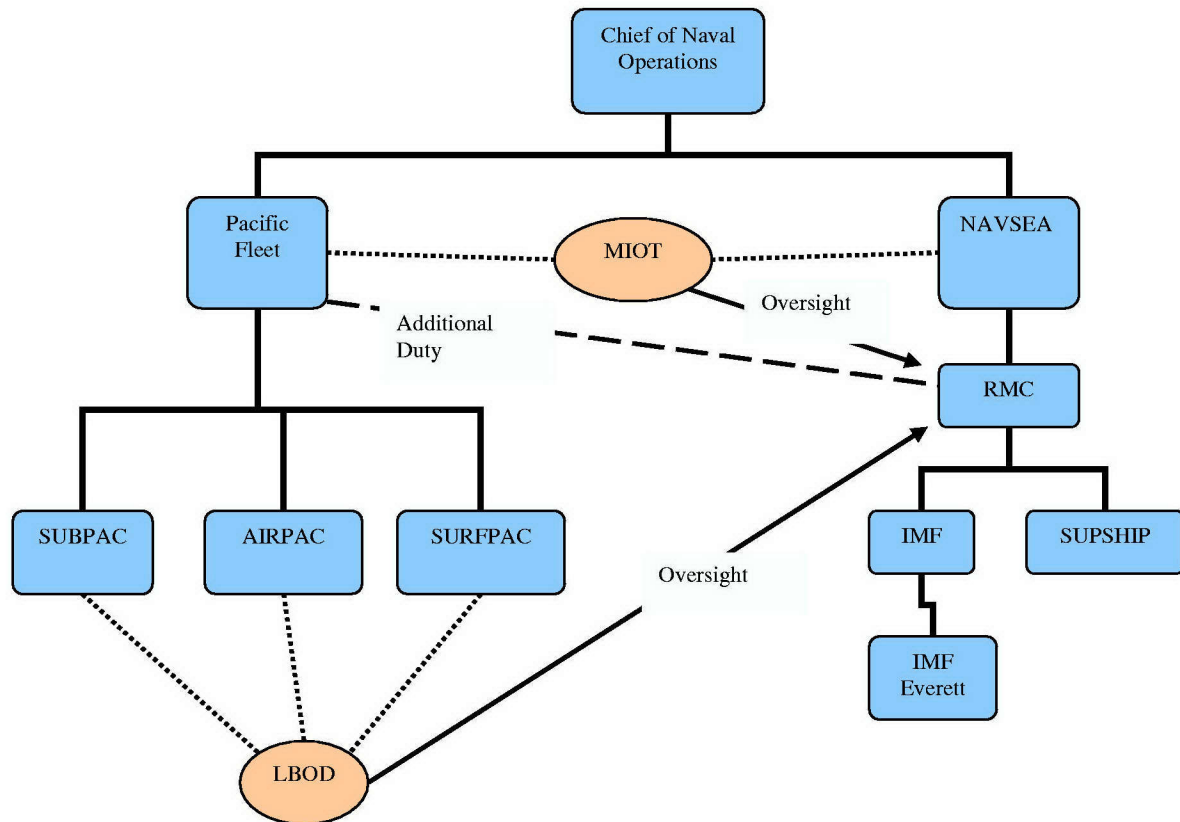


Figure 18: Post-merger Command Structure

The major hurdle to changing the architecture in the Northwest was the fact that there were two funding schemes. This kept the command structure from changing because the Commander of the Pacific Fleet would not move claimancy of PSNS from NAVSEA to Pacific Fleet until one funding system could be put into place. With the move of PSNS to mission funding, all commands within the region now have the same funding scheme and the funding can flow through a single command to subordinate commands within the region. The region need now submit only one budget. This alignment of funding flow (Figure 19) allows the most drastic change to the architecture to take place, which is the change to the organizational aspect (Figure 20).

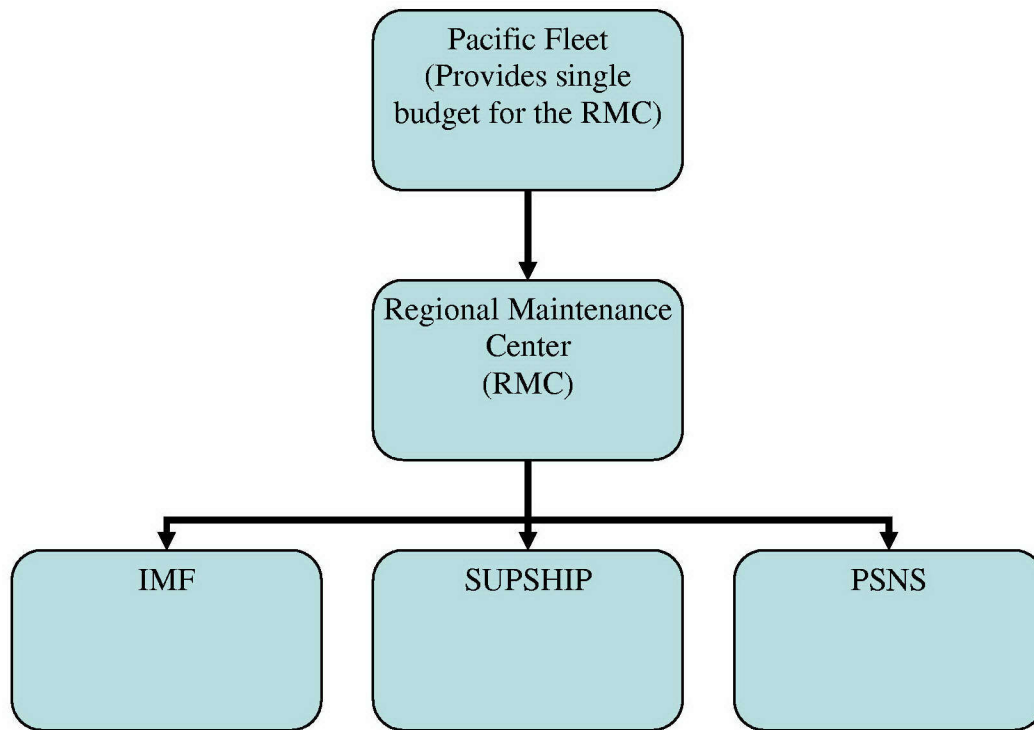


Figure 19: Post-merger View of Funding Flow

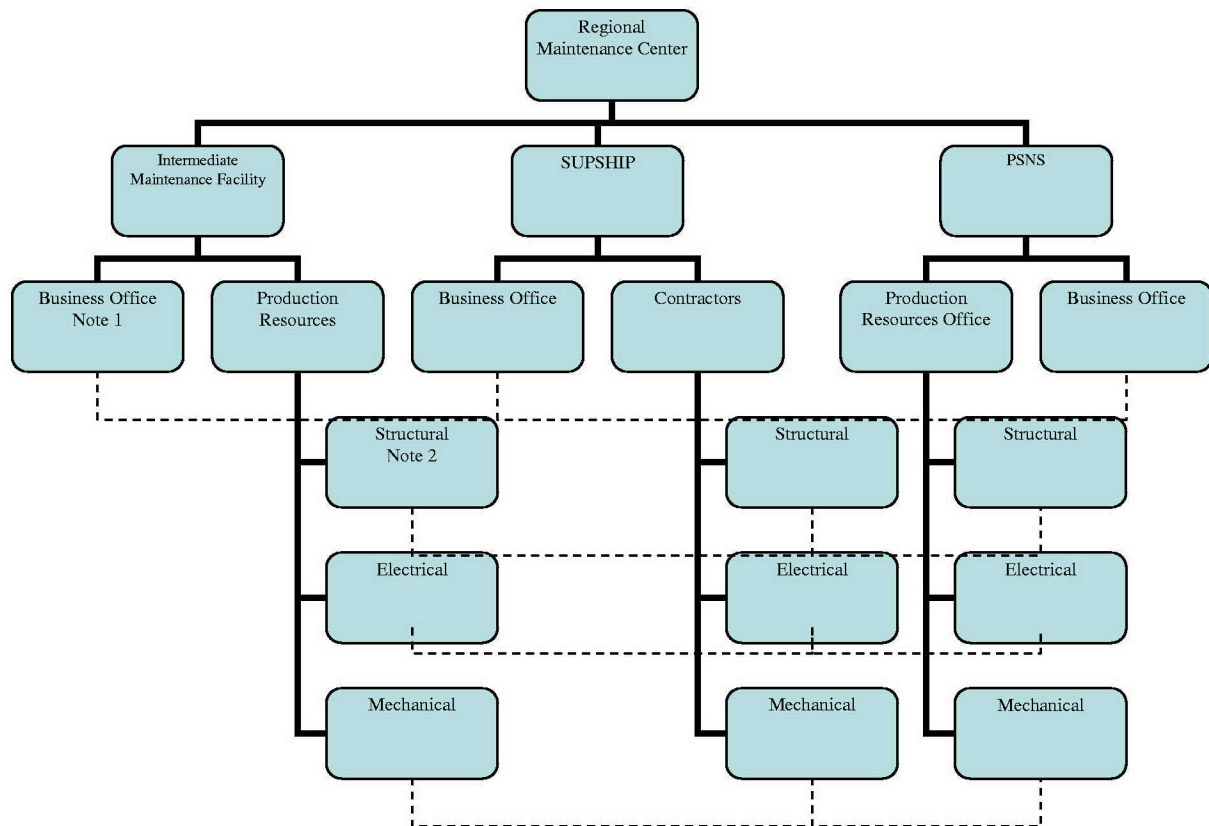


Figure 20: Post Merger Organizational Architecture
 Note 1: Business offices work from a single regional budget.
 Note 2: Production resources are shared within region.

The organizational architecture has changed dramatically. At the top, there is now a single officer in charge within the region who is the only one who reports outside of the region. The commanders of the other maintenance activities no longer report to different commands outside the region. With this control within the region, and keeping to a single budget, production resources can be shared to best accomplish the most important work as directed by the LBOD.

6. Analysis of Post-merger Views

Figures 21, 22, and 23 are again legs of the Functional View, Figure 1, separated by ship type, this time mapped against the corresponding portion of the Post-merger Organizational View. These figures show that the four activities are still generally aligned by product/customer orientation. However, with the single maintenance commander and with a single budget, there is the opportunity for flexible use of personnel to meet changing priorities. This flexibility also brings the possibility of sometime in the future evolving to a single maintenance concept.

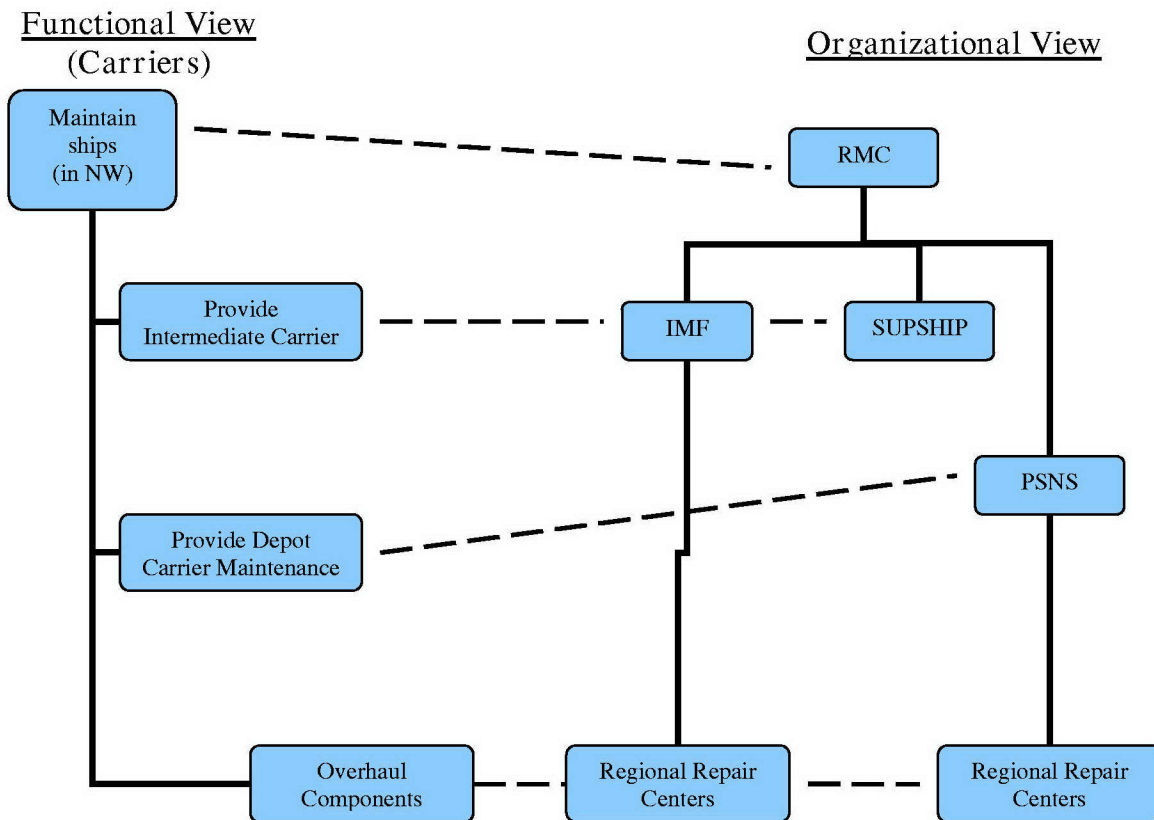


Figure 21: Post-merger Alignment of Functional View with Organizational View (Aircraft Carriers)

Functional View
(Submarines)

Organizational View

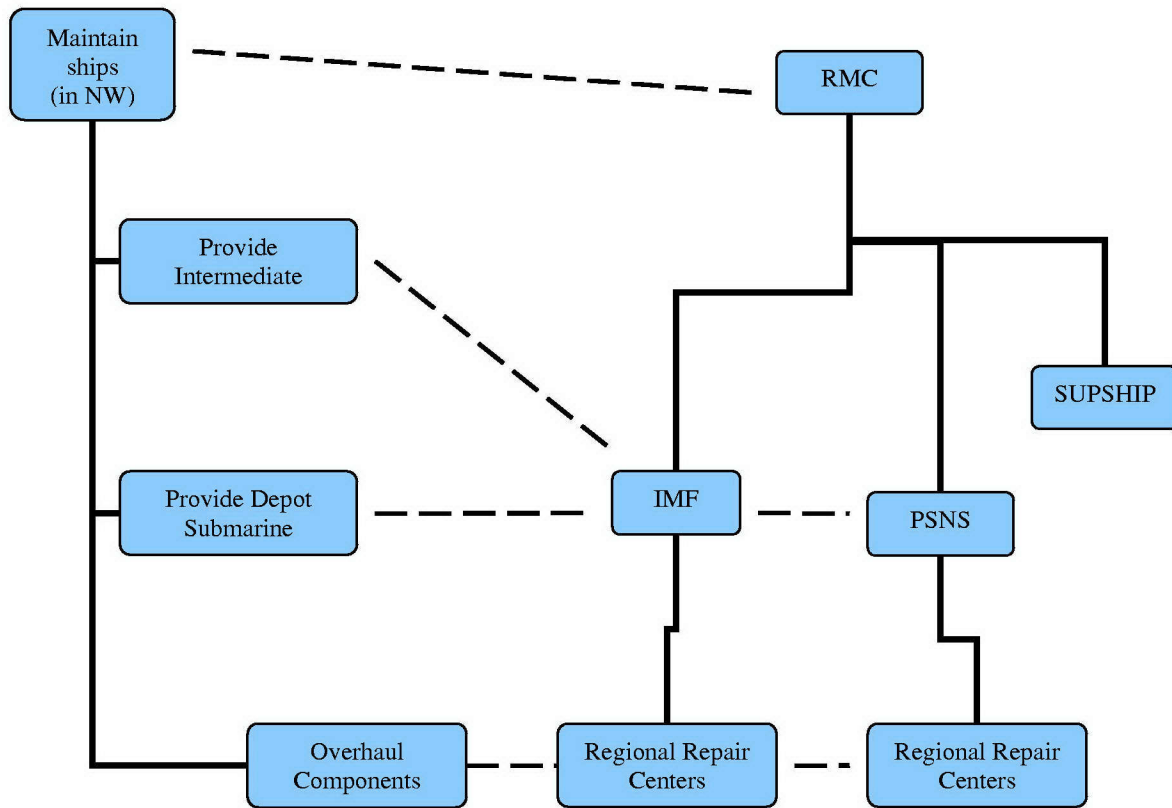


Figure 22: Post-merger Alignment of Functional View with Organizational View
(Submarines)

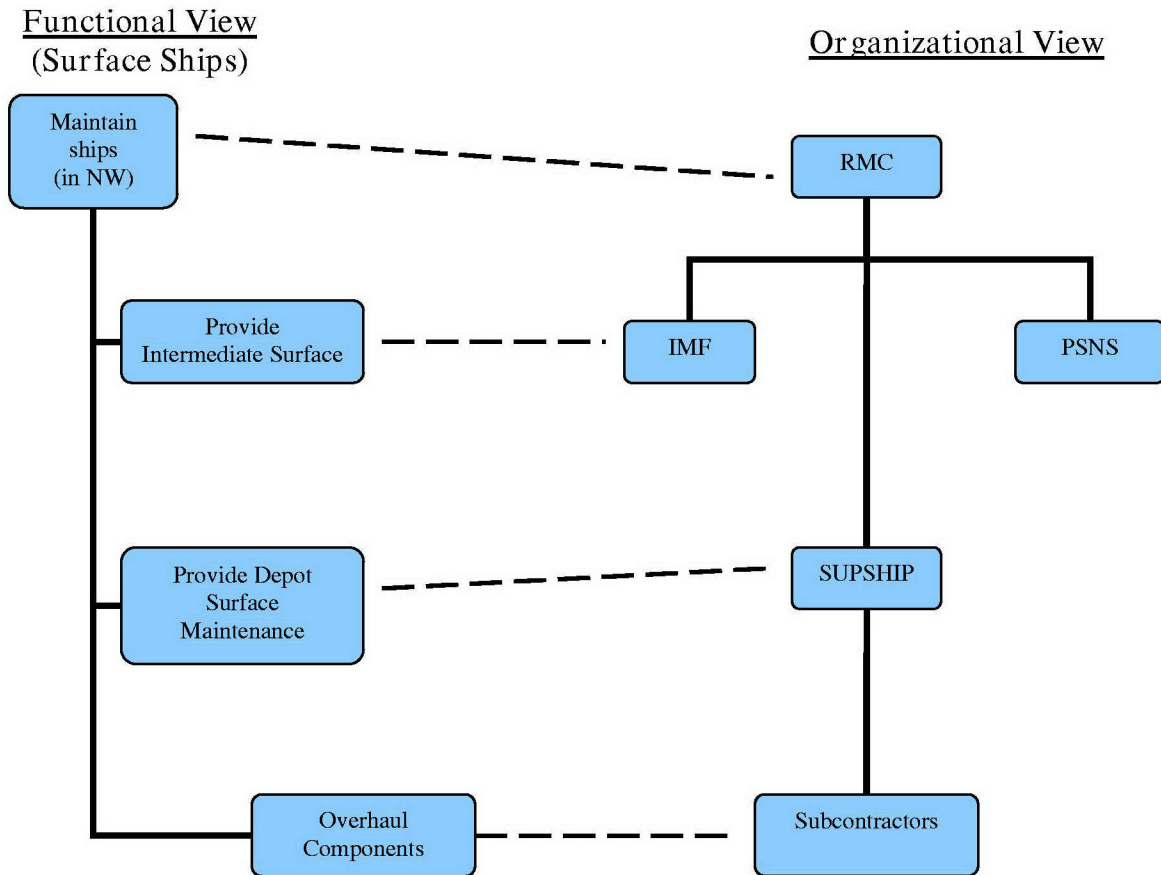


Figure 23: Post-merger Alignment of Functional View with Organizational View (Surface Ships)

D. RECOMMENDATIONS ON ARCHITECTURE

The architecture need not remain static. With mission finding, further change is possible and could be beneficial. For instance: for there to be correlation between the functional and organizational aspects, the top tier could stand alone with general management responsibility for maintenance on all classes of ships; there could be a second tier organization for “Maintain Aircraft Carriers,” “Maintain Submarines,” and “Maintain Surface Ships.” And since “Overhaul Components” is common to all ship classes, move it up to a tier on par with the ship classes.

In order to handle the trade skills as well as the geographical aspects simultaneously with the product aspect, a “three legged stool” organizational concept₃ may fit this situation (Figure 24). This model would achieve improved flexibility in use of resources since it would tie projects only to resource availability and not to any particular geographic location based on history. Similarly, separating the management of the trade skills from each site and consolidating to a regional management concept would not only maximize flexibility, but would improve project-to-talent matching (getting the best mechanic on the most critical job). Further, this would facilitate the consolidation of formal employee classroom training and would increase the opportunities for on-the-job training where the right experience on the right ship type could be available for each apprentice in the right sequence. This concept would also eliminate the necessity of duplicate trade management and administrative positions.

₃ Galbraith, Jay R., *Competing with Flexible Lateral Organizations*, p. 124 ff.

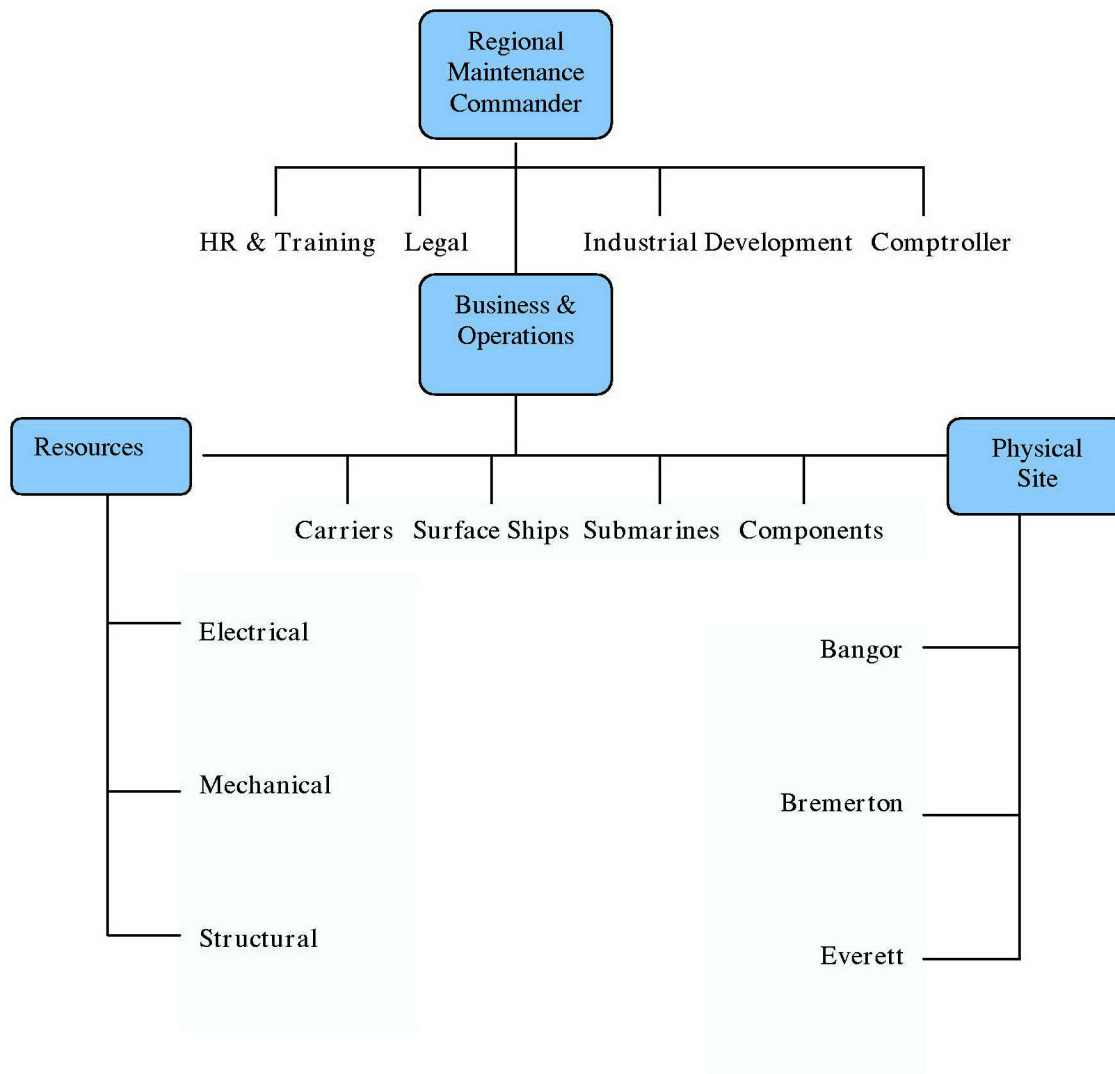


Figure 24: Three-legged Stool Concept
 (After Galbraith, Jay R., *Competing with Flexible Lateral Organizations*, Fig. 7.1, p. 125)

E. SUMMARY

The Navy had maintained its ships using an architecture that was constructed along the lines of ship type, as was demonstrated by looking at functional, command, and financial views. Likewise, the maintenance activities in the Northwest were organized to operate more or less independently from each other, again basically along the lines of ship type. However, in an effort to make its maintenance dollars go farther, the Navy looked at the duplication of having similar industrial activities in the same geographic region as an inefficiency that needed to be streamlined – for this the Regional Repair Centers were established. This RRC concept eliminated some of the duplication of shops from the physical view, but it proved cumbersome due to the misalignment of funding flow and due to having multiple organizations involved within the region – answering to multiple commands outside of the region. Conversion to a single funding scheme has allowed the merger of the several maintenance activities under one commander and has allowed the Navy to align the funding and command structure to flow down to this single command. This alignment has led the way for more effective prioritization of the use of resources through the establishment of the LBOD, and has led the way for future organizational and physical possibilities under the oversight of the MIOT.

Indeed, the conversion of PSNS to Mission Funding has allowed change to an architecture that is better aligned, more flexible and better able to serve the customers' changing priorities, but how has that change affected the performance itself? This is addressed in the next chapter.

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IV. THE EFFECT OF FUNDING SCHEME ON THE PERFORMANCE

A. INTRODUCTION: DECISIONS ARE THE KEY

Changes to the architecture of Navy maintenance in the Northwest have streamlined command lines and funding flow. However, the services provided by the Naval Maintenance organization are put into effect and are shaped by means of the decisions that are made at points within that architecture. This chapter explores how the change to Mission Funding has affected the nature of those decisions, has affected where those decisions are now made within the organization, and how the change to Mission Funding has contributed to changes in the architecture itself. This chapter begins by briefly discussing decisions in general and then goes into greater detail on the decisions made within the maintenance activity.

B. BACKGROUND: DECISIONS UNDER MISSION FUNDING

With RMS, because the funds expire at the end of the year, much care must be exercised with the rate at which the funds are being spent (this is informally known as the “burn rate”). If the funds are expended too rapidly, there will not be enough money to pay the employees through the end of the fiscal year. Consequently, assuming no addition of emergency funds, some or all employees would be sent home without pay for the remainder of the fiscal year. If the “burn rate” were too slow, the fiscal year would end with unexpended funds that would not be able to be used at all. This would mean that the Navy would not have gotten all the maintenance it was entitled to for that year. Readiness would have suffered. This situation is similar to the lunar module landing problem (from which the term, “burn rate” has migrated) where the problem is to control the burning of rocket fuel at such a rate that the fuel is not used up at too high an altitude nor not burned enough to slow the module to a safe landing velocity.

There are several spending categories that must be coordinated. Unlike the simplicity of the lunar module problem, in the RMS funding of ship repair there is complexity inherent in the fact that money can be spent among several categories during the year. Besides straight time labor, money can be spent on overtime labor, materials used in ship

maintenance, industrial tools and equipment used in ship maintenance, and on contracting to the private sector for services to assist in the performance of ship maintenance. The complexity emerges when one begins to understand that these categories are interrelated in such a way that insufficient spending in one category can inhibit or even prevent the effectiveness of spending in another category.

To understand how insufficient spending in the material category can affect the effectiveness of sufficient spending in the labor category, take the simple example of welding. It is just one of the many processes of ship maintenance, but it is absolutely essential. If insufficient money is spent on material, an exhausted stock of welding rod may be prevented from being replenished. While there may be plenty of weldors available to weld, without a supply of welding rod, no welding can take place, this essential maintenance process is not done, the repair is not completed, and the ship is not ready for sea. Likewise for the spending category of contracting services, there are some new or proprietary processes for which contractor services are essential. It would make no sense to plan for funding of government labor to sand blast a ballast tank if the funding of proprietary preservative coating services of the contractor were not also included in that plan.

Further complexity along with uncertainty is the result of the fact that ship availability schedules and the associated work packages can change. Although the budget is set based on the best estimate of the schedules of the ship availabilities, uncertainties exist because, due to the federal budgeting process, the budget is set two full years in advance of those availabilities. Needless to say, emergencies, changing mission, changing doctrine, changing priorities, and even politics can all work to upset such schedules and perhaps even the budget itself. In the Gulf War, as ships stayed on station in the effort required to free Kuwait, availability dates were missed by many weeks. This created a huge shortage of work, as that which had been planned was impossible to accomplish with the absence of the ships. Conversely, the amount of maintenance effort was suddenly increased recently in the operation to liberate Iraq, when an aircraft carrier maintenance availability was compressed by a whole month. (Note that although these two examples affected NWCF funded Naval Shipyards, they serve to indicate the scale of the effect of demonstrated uncertainty in ship schedules. In the Gulf War instance, three thousand men per day were essentially left idle,

with respect to their normal skills, for the amount of time that the availabilities were delayed. Under mission funding, they would have been permitted to work on several ships that happened to be in port at the time.)

The different funding schemes affect the ways of accomplishing several business functions. Some of these are: 1) how the budget is submitted, 2) how labor is planned for and used, 3) how labor dollars are controlled, 4) how funds are actually received, 5) how capital assets are acquired or replaced, 6) how priorities are set for the many projects that are worked, 7) how human resources can be shifted among projects, and 8) how new work is taken on.

C. THE EFFECT OF FUNDING SCHEME ON DECISIONS AND INTERFACES THROUGHOUT THE ARCHITECTURE OF THE MAINTENANCE ACTIVITY

1. Introduction

For this section, interviews were given at several levels of the organization. Selection of the positions for interviews centered around those most directly involved with the main business of ship repair. Questions were developed from the research questions of this thesis. Interviews were then aggregated and analyzed.

2. Conduct of Interviews

The interviews were conducted using a semi-structured format with both parties having a copy of the questions in front of them. A single interviewer both asked the questions and took written notes. Rather than seeking restricted answers, the questions were used as a catalyst to get the thoughts flowing. Due to the informal nature of this dialogue format, what was recorded was a description of what was said rather than exact quotes. It is interesting to note that although there was no strict prescribed time period enforced for the interviews, they each lasted close to the same amount of time, one hour and fifteen minutes.

3. Interview Questions

The thesis research questions were not used directly. Subordinate questions were developed for each research question. These were designed to start the interviewee talking about something more specific about which he or she was familiar without immediately going to opinions of a general nature. This method proved valuable in that in more than one case when although an interviewee at the outset of the interview had stated a general opinion, these more detailed questions would bring out facts and opinions contrary to the first general opinion.

The interview questions are shown in Appendix A.

4. Selection of Interviewees

Interviewees were selected from those positions having most to do with the interface of funding with the main work of the activity. For this purpose, heads of the Comptroller's Department, the Business and Strategic Planning Department, the Production Resources Department, and the Operations Department were selected. Each department head then recommended one interviewee from each of three levels within their department except for the Comptroller's Department where, due to its relative size and specific function, only two levels were selected, and from the Business and Strategic Planning Department where two interviewees from one level were selected to properly represent ship overhaul work as well as component repair work. Through the answers from the interviewees, it became apparent that the effects of mission funding on decisions did not reach below the foreman level. This essentially answered Research Question Number Seven, which asked, "What is the lowest level that decisions can be made under each funding scheme?" A customer representative was also interviewed both to verify the data from one of the other interviews as well as to give a perspective from outside of the maintenance activity. This brought the total number of interviewees to thirteen. A chart of the organization indicating the interviewees is shown in Appendix B.

5. Processing the Interviews

Interviews were transcribed from the interviewer's notes into answers for each of the interview questions. These answers were then aggregated into answers to seven of the eight research questions. At this point, a list of thirty-seven processes and issues that were affected by the change to Mission Funding was gleaned from the interviews. This list also shows the changes for each process or issue due to the conversion to Mission Funding.

These changes were then reviewed to determine the nature of each whereby they were annotated as to three general types: Those where the level of control resides shifts up, down, or laterally, those where there is a change either in criteria or motivation in how a decision is made, and those where there is a change either in results or in the process.

The interviews appear in Appendix C. The aggregation of interviews under research questions is in Appendix D. The list of changes due to Mission Funding is shown in Appendix E.

6. Interview Results

a. Overview:

Of the thirty-seven changes due to mission funding, fifteen had to do with a shift in organization level where control resides, twenty had to do with changes in criteria or motivation, five had to do with changes in results or process, and one was used to indicate the organizational level below which no change was reported. One reported change involved both a level shift in control and a change in criteria and process.

Of the fifteen shifts in control, twelve control areas increased in organization level where the control resides, only one went down, and two areas shifted laterally across departments. In six of the fifteen shifts, the office to which control migrated was the Comptroller's Office. Control also migrated to the Local Board of Directors (LBOD), a Budget Execution Control Board (BECB), an Overtime Control Board (OCB), a New Work Acceptance Committee (NWAC), and Pacific Fleet Headquarters.

The changes in criteria/motivation were drastic, often going from a practice being allowed to being prohibited, or from a certain process to no process at all, or from one criterion to an entirely different one. There were no changes merely by amount or degree. The changes in result/process, on the other hand, were of a graduated nature.

b. Discussion:

Reflecting on the interview results, three themes become apparent. The first is more control – more central control of spending. This is shown by the migration of control to the Comptroller. This shift is evidence that Mission Funding has changed the nature of the many decisions in ship repair that involve spending money. Per the interviews, there are decisions regarding working overtime; rewarding special achievement; taking on new work; purchasing training, tools, and material; travel; and deciding which projects to work on and how many people to assign to each. Since there is only a set amount of money in the budget that has to last the entire year, and since these decisions represent many channels of outbound funding flow, new procedures and control routes have been set up within the internal architecture. In fact, the internal architecture itself has been changed for the purpose of control of spending with the addition of the BECB and the OCB as new control points.

The second theme is less control – a freedom to shift workers to fleet work as they become available without the artificial constraints of NWCF. At the same time, there is more cooperation among the type commanders and the maintenance provider via the LBOD. The flexibility of shifting workers is perhaps the greatest benefit of mission funding. The interviews indicated more frequent and greater number of movements of workers between sites in the Northwest as well as streamlined processes in sharing workers from other Mission Funded activities. However, the interviews also discovered that it is still cumbersome to share with NWCF activities.

The third theme is a drastic change in decision criteria/ motivation. Now there is motivation based on twin criteria – get as much maintenance done and work on the highest priority. Changes within the architecture support these changes in criteria with an increased interface between production resources and the New Work Acceptance Committee, where smaller jobs are prioritized for immediate manning, and the interface between the

maintenance activity and the LBOD, where entire projects are prioritized and ship availability schedules can be rearranged.

Changes in the process of planning a project also support getting the most critical work done within a limited predisposed budget. In such planning, the funds available are considered first after which the repair work that is most important to the mission of the ship is determined and scheduled. In the past, under NWCF, the work package was determined first and then the price was negotiated.

A possible down side is that motivation at the worker level may suffer. Although no report of such in the Northwest appeared in the interviews, one interviewee with credible experience at Pearl Harbor stated that the workforce there lost the business motivation to improve performance they once had under NWCF and that now, having been under Mission Funding for several years, the workforce at Pearl Harbor had reached a comfort level of performance.

One type of organizational phenomenon that the author was wary of at the outset of this study was the practice of “gaming the system.” He expected this practice to take the form of stretching out certain jobs to make sure that they did not beat the estimate so that there could be no basis for adjusting the estimate downward. However, although pointed questions were asked at all levels of the organization during the interview process, there was no evidence of gaming the system in this manner.

Material ordering was a different story. For the best intentions, under NWCF, parts and material were said to have been routinely ordered using multiple sources (i.e., multiple ordering) to avoid as much as possible the situation where lack of parts or material held up the project. This had been done under rules where such parts and material were not paid for until actually used. Now, under Mission Funding, payment is made at the time of the order with the result that ordering twice incurs twice the cost. Although multiple ordering still occurs, education of the workforce regarding its high cost should diminish the practice over time.

Although the changes in the operation of the maintenance organization in the Northwest, brought about by the change to Mission Funding as well as the architectural realignments shown in the previous chapter, have not been in place for a long enough period

of time to see measurable changes in performance efficiency, one may at least begin to see which areas these efficiencies are likely to appear and be effectively determined in future research. One such area will be in overhead functions. The simplicity of Mission Funding, its emphasis on controlled spending along with the consolidation of commands in the region should eventually cause a decrease in the number of people filling various administrative and other overhead functions. This decrease in the number of personnel would be a measure of the increased efficiency of the organization.

Another area that shows promise is the measurement of the backlog of maintenance on the ships permanently assigned to the Northwest – specifically, the measurement of deferred maintenance on Trident Submarines and the measurement of Consolidated Ship Maintenance Projects (CSMP) on the surface ships. With these measurements, even though the number of direct-charge labor may stay the same, the efficient use of this labor should result in a decrease in both. This would be a second measure of the increase in efficiency of the organization.

A third area that could be measured would be in material ordering and use. As discovered in the interviews, material ordering costs are more visible under Mission Funding. The thinking here is that the efficient ordering of material would eliminate over-ordering and that as over-ordering decreases, the amount of excess material will decrease. The practical measurement that could be taken would be the dollar value of excess material.

V. EXPLORING AN ALTERNATIVE: INTRAPRENEURING

We must transform not only our Armed Forces, but also the Defense Department that serves them—by encouraging a culture of creativity and intelligent risk taking. We must promote a more entrepreneurial approach to developing military capabilities—one that encourages people to be proactive, not reactive, and to behave less like bureaucrats and more like venture capitalists... - Secretary of Defense, Donald H. Rumsfeld, speaks on "21st Century" Transformation of the U.S. Armed Forces to the National Defense University in Washington, D.C., Thursday, January 31, 2002.

A. INTRODUCTION

1. Background

Is Mission Funding the Final Answer? Although benefits have been gained through architectural changes and switch to Mission Funding, other possibilities exist that could give further opportunities for improved performance of the Navy's maintenance organizations. So far, the benefits reported seem to be limited down to the project management level. Further down the chain, and where the largest amount of labor dollars is being spent, the benefits have not flowed. There is now the possibility of the workforce "reaching a comfort level of performance". Furthermore, architectural and funding scheme change represent improvements imposed by higher authority. Buy-in by the organizations themselves has been worked for over a long period of time and at great expense. Instead of forcing unsolicited change from above, a better approach might be to try to set up a system whereby system improvements would occur more spontaneously, where people within the system actually volunteer to make improvements and are empowered to do so. Such an approach was taken by another federal agency, the National Forest Service, and applied on a trial basis within a discrete set of functions in one of its regions. Because this approach had indications that natural system improvement tendencies could exist in a government entity, it is briefly introduced here as one place the Navy could look for further improvement to the architecture and funding scheme of at least a portion of its maintenance organization.

Where did this approach come from and what is it called? There seems to be a trend for big businesses to act as small businesses. The idea is to capture the energy and innovation associated with Entrepreneurialism. John Naisbitt, writing in *Global Paradox*, 1994, addresses such a trend:

The principle of the global paradox – the bigger the world economy, the more powerful its smallest players – applies especially to business. Huge companies like IBM, Philips, and GM must break up to become confederations of small, autonomous, entrepreneurial companies if they are to survive...only small and medium-sized companies – or big companies that have restyled themselves as networks of entrepreneurs – will survive to be viable when we turn the corner of the next century.

This trend not only affects private business, but large centrally managed governments as well. The Chinese economy, perhaps the world's largest example of military-style central management, achieved an amazing turnaround when principles of entrepreneurialism were allowed to take hold and flourish. Surprisingly, the Chinese army, the People's Liberation Army (PLA), is itself an example of entrepreneurialism – Per Naisbitt, the PLA has “established thousands of businesses – from arms exporting and airlines to pig farms – to raise extra money.” But what steps have the U.S. government taken?

Throughout the past couple of decades, there have been suggestions, requests, and outright direction by top levels of the U.S. government to bring the mechanisms and motivations of private enterprise into government agencies. One instance where these mechanisms and motivations have been closely adapted and established has been in Region 5 of the National Forest Service where a concept called “Intrapreneuring” and its associated funding scheme have been implemented.

The seeds of Intrapreneuring were germinated by Gifford Pinchot III and his wife Elizabeth S. Pinchot in 1978 when they attended Robert Schwartz's School for Entrepreneurs. Their thoughts, recorded in “Intra-Corporate Entrepreneurship” on their web site, www.intrapreneur.com, begin as follows:

Today's large corporations are suffering from size. They are so large that the managers making decisions are often isolated from a personal knowledge of the problems to be solved. The traditional answer for this situation is decentralization.

Unfortunately, decentralization alone is not enough. In a hierarchical organization, promotions can be won by social graces, loyalty to one's boss, and in general, political skills. Courage, original thought, and ability to observe the obvious but overlooked fact, do not necessarily lead to success.

If we are to get really good problem-solving in our decentralized corporation, we must introduce a system that gives the decision to those who get successful results, not to the inoffensive. Such people will be willing to take moderate risks and will be more concerned with achieving results than with gaining influence. These are among the characteristics of the successful entrepreneur.

The Pinchots went on to develop the mechanisms required to establish and maintain enterprises within the large corporation so that the entrepreneurial spirit may be released within the individuals who embrace the Intrapreneuring concept.

2. Description of Intrapreneuring

Intrapreneuring is a system whereby an individual or group is allowed to set up a business or enterprise within a much larger business or corporation. The intrapreneurs remain employees of the larger company but at the same time are allowed much autonomy in making certain decisions. The goals of this system are to free-up the originality of those closest to the problems to be solved, and to motivate, recognize, and reward the many talented people within the corporation who have been held back due to bureaucratic inertia and internal politics. Through Intrapreneuring, the forces of the free market are actually brought inside the corporation with resulting efficiency gains.

3. Why Does Intrapreneuring Work?

Freedom to contribute in one's own way, freedom to do what is right, and what makes sense, freedom to innovate, and freedom to decide what is important, "the opportunity for the average worker to share in the task of thinking" [Heron, *Why Men Work*, (c) 1948, Stanford University Press], all add up to describing what people mean when they use the phrase, "a sense of ownership." This freedom results in decisions being made at the lowest level, healthy group dynamics through the "selection of work companions" [ibid.], and cost-benefit comparison more closely and effectively tied to the myriad decisions at the lowest

level, where most of the large organization's money is actually spent. Free market mechanisms integral with Intrapreneuring tend to push quality upward and costs downward while keeping within the customer's schedule expectations.

B. CASE HISTORY: THE NATIONAL FOREST SERVICE REGION FIVE

Region Five of the National Forest Service (located in portions of California and Nevada) is made up of several operational units called "Forests." Prior to the early 1990s each "Forest" had its own self-sufficient organization containing all the functions required to provide the complete set of services making up the mission of the Forest Service as well as all those functions required for the administration of the particular "Forest." Each had experts in each of the specialized fields of which one was timber scaling – a mission function that estimated the market value of standing timber within the forest – another was human resources – an administrative function. No sharing of the experts was practiced. When not performing their special function, these experts were given collateral tasks. However, in the early 1990s falling budgets resulted in deep cuts in Region Five. Many employees were let go. The cuts were so deep that "Forests" lost many of their experts and with them the ability to perform certain portions of their mission. The answer, of course, was to share the remaining experts between the "Forests." The form that this sharing took was Intrapreneuring.

Successful intrapreneuring requires many factors being applied simultaneously. The factors are: the existence of a "godfather," the existence of a champion, establishing appropriate business rules, establishing a suitable financial system, providing a safety net for the employees involved, training, promotion of the idea, motivation by means of an outside threat, tolerance by non-supporters, and incubation. In 1994, these factors happened to come together all at once resulting in the establishment of "enterprises" at Region Five of the Forest Service. The role of the "godfather" was played by David Radloff at the Forest Service Headquarters who, through the Reinventing Government Initiative, granted both protection as well as relaxation of regulations to regions experimenting with new ideas. Another godfather was Pacific Southwest Regional Forester Lynn Sprague who made a command decision to try the experiment. He told his managers that although they didn't

have to support the idea, they would not be permitted to sabotage it. The champion was Mike Duffy, Region Five financial management director, who guided, directed, and enabled the initiative through to implementation. The “outside threat” motivation came in the form of a total of twenty-five percent budget cut over a period of only a few years. Through collaboration with, and training provided by Mr. & Mrs. Pinchot, Mike Duffy developed business rules and, under the protection of the godfathers Radloff and Sprague, proceeded to set up a financial system and to provide a safety net for the participants.

Known in the Forest Service as “Enterprisers” because the internal businesses they run are called “Enterprises,” participants are full time, permanent federal employees who receive their regular paycheck every two weeks. They are transferred from their parent National Forest organizations and placed under a separate line officer. This eliminates them from discretionary reassignment as well as from any reduction-in-force considerations of their former organizations. Each enterprise works as its own business with profit and loss accounting. All costs are taken into account, including furniture purchases, training procured, cost of employees (this includes not only working time, but slack periods as well as sick and annual leave). Equipment, office rental, supplies, and the cost of subcontractor services are also accounted for.

There is a three-person Support Team for the region consisting of the financial manager, a human services specialist, and a businessperson hired from the private sector who brings in a free enterprise perspective. Enterprisers contact the Support Team at least twice per week to receive coaching. “Profits” are deposited in a bank run by the Support Team. Each enterprise has its own account. Loans are made to enterprises in times of negative cash flow. The Support Team helps failing enterprises restructure their offerings based on market needs. If that doesn’t work, the members of the failed enterprise can be either hooked up with another enterprise that needs them or are put back into their pre-enterprise Forest.

To start up an enterprise, interested employees form a team and come up with a proposal or “prospectus.” The prospectus is then presented to the Support Team who decides if it is worthy of continuing through the process. Candidate teams are sent through an intense ten-day workshop where they prepare their business plan. The business plans are then

presented to a Steering Committee made up of upper management and two consultants who specialize in entrepreneur practices.

The National Forest operates under a working capital fund system that dates back to the 1950's. Money used to come from the customer via something similar to "cost reimbursable" but now it is handled similar to the Navy's "fixed price" method. The services of each enterprise are sold not only to the entire region, and not only to the entire Forest Service across the nation, but the services are also sold to other government agencies as well. Examples of services marketed outside of the Forest Service are recreational, environmental/ecological, and wildlife services. The State of California is one of the non-Forest Service customers.

The benefits the National Forest Service has seen by the establishment of its enterprises are:

- a. Freedom for the Forest Managers to make decisions based on what work needs to be accomplished within the budget rather than making decisions based on who needs to be employed. Thus, "care and feeding" and "keeping family together" thinking goes away.
- b. Skilled employees go where the market demands.
- c. True costs for the services that the Forest Manager orders become visible. Economizing is the result.
- d. Cost accountability takes place at the level of the organization at which the work is actually accomplished and where improvements can be directly funded, implemented, measured, and justified.
- e. Over-hiring within the enterprise is naturally curbed because the survival of the enterprise depends on its bottom line, not on the number of employees.
- f. Conversely, temporary talent and specialized services can be subcontracted in a very selective manner that eliminates the duplication and waste that can happen when such services or talent are acquired at a higher organizational level.

- g. Happy employees. Masters of their own fate, they are free to decide upon and acquire training and materials they need to help their enterprise succeed.

C. APPLICABILITY TO NAVY MAINTENANCE

How would Intrapreneuring work within the Navy maintenance environment? Actually the parent idea, entrepreneurialism, is already a large part of Navy maintenance (not to mention now comprises the total of Navy shipbuilding). Through the former SUPSHIP organization, ship maintenance is accomplished using private sector enterprises. These enterprises collectively provide quite a range of work, from deck-covering tasks through depot-level overhaul of entire ships. In fact, at least in the Northwest, Surface ships are rarely overhauled by government activities. Contracts are negotiated and production schedules are kept through a disciplined project management process. Intrapreneurialism, that is, enterprises within the Navy, would work similarly with internal contracts under the existing project management processes.

An internal contract for Navy enterprises would not look much different from existing work requests or technical work documents where estimates for the work are already included. However, there would be a big underlying difference in that the responsibility for execution of the work to be done by the internal enterprise would more directly lie with the director of that enterprise. That director would have been directly in charge of hiring his people, and getting them the tools and training they need in order execute successfully for their customers. The director would also be empowered and expected to subcontract for any contingencies where he needs to supplement his capabilities or capacity. There would be agreement between the internal customer and the director as to the exact work to be done, the schedule, and the cost. The director and those who work for him would feel the responsibility of the risk to their enterprise should they fail. There would be no one up the chain to dilute the blame for failure.

The agreement on the terms of the internal contract would be based on a hard, honest look at the enterprise's capacity rather than on the mere compliance of a department receiving orders from higher up and "doing the best they can". If, after reviewing the task it

was determined that the schedule could not be met with current enterprise resources, the director could exercise one of his contingencies, adding to the negotiated cost accordingly.

Another difference between the present work request and the internal contract would be that whereas in the work request only labor and material are estimated, in the internal contract the entire cost would be figured in. This would include all of the administration, personnel (including leave and benefits), tools, equipment, training, building, utilities, and outsourced services. This total cost visibility would give the opportunity for better cost-saving decisions to be made at a lower level than at present.

In order to set up enterprises, a financial system could be established under the supervision of the Comptroller's office as a "bank" that would handle both loaning of funds and holding the income of the enterprises. Funds to pay for the services of the enterprises would be budgeted for under the Mission Funding system as material dollars in the same way that contractor services are presently budgeted for.

There must be assurance that the Navy's highest priority work gets done. This assurance would take the form of a prioritization agreement similar to that currently used with some private contracts. Because the enterprise director would be free to develop contingency resources, he could actually have a better chance to meet prioritized schedule than does the shop foreman at present.

Culture change may be the biggest hurdle to overcome in establishing Intrapreneuring in Navy maintenance. Maintenance commanders prefer to have all of their capabilities in their own wardroom. In such an environment where loyalty to one's command remains important, it would be difficult to propose a system where autonomy of work centers was increased. Likewise, the inefficiencies attached to the existing way of operating may be difficult to bring to light. Trust in the invisible hand of free enterprise to replace the visible hand of direct command and control would take a carefully designed and implemented process. However, given the continued trust of the Surface fleet upon free enterprise, Intrapreneuring could eventually be established.

To gain the trust required to establish an Intrapreneuring scheme, it would be best to start with a pilot program. Within ship maintenance there are many highly specialized areas of expertise and scarce resources that could benefit the Navy by being marketed internally

under an Intrapreneuring scheme.. Among these areas of expertise are Regional Repair Centers (RRCs), which serve particular product lines. The RRCs work most efficiently when at least a certain minimum number of jobs are being worked. They typically work on components, many of which are destined for replenishment of rotatable pools that are warehoused to be available for use as immediate replacements for components that either fail in service or need to be replaced during short availabilities that are too brief to allow for the overhaul of the particular component that is removed from the ship. Thus, the Regional Repair Centers may work to a different schedule than the shipyard at which they are located. This independent schedule together with the fact that the Regional Repair Centers' products are components, rather than a total ship system, and that unique skills, training, experience, tools, and facility are required for working those components, make them candidates for decentralized operation and therefore as potential pilots for Intrapreneuring.

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VI. CONCLUSION AND RECOMMENDATIONS

A. CONCLUSION

Navy efforts to bring about efficiencies and concomitant savings by means of consolidation of maintenance activities in the Northwest region were thwarted by lack of a systems approach. The system existing prior to consolidation was set up to operate along the lines of ship type; whereas the consolidation the Navy was promoting focused on sharing resources across all ship types. The existing system encouraged the co-existence of separate independent maintenance activities working for different bosses under different, incompatible funding schemes; consequently, when a change was forced, as with the set up of the RRCs, the system pushed back. Success came only through a revision of the architecture, which included: a congruence of funding scheme, a streamlining of command structure, cooperation of the stakeholders, and a single maintenance budget for the region. The organizations that make up the Regional Maintenance Command are still a little awkward because they are loyal to their original industrial sites, but the system architecture has a potential for further change for the better.

Compared to PSNS under NWCF, Mission Funding operations are characterized by: 1) a rise in the organizational level at which control is exercised; 2) more committees formed to give the advantages of both expert opinion as well as stakeholder buy-in regarding control of scarce resources (a fixed number of worker man-hours and a fixed budget); 3) a criteria change in how maintenance priorities are set – from an tendency to find more work for which money was received (a funding-based focus under NWCF) to a tendency to get the most maintenance done on the highest priority (a fixed-resource based focus under Mission Funding).

Intrapreneuring illustrates that natural system improvement tendencies could exist in a government enterprise. RRCs could possibly benefit from operating under the Intrapreneuring scheme.

System Architectural change and the change to Mission Funding have worked together to improve the decisions that are made within the architecture and should result in improved performance.

B. RECOMMENDATIONS

With mission finding, further change in the architecture could be beneficial. In order to handle the trade skills as well as the geographical aspects simultaneously with the product aspect, a “three legged stool” organizational concept may fit this situation (Figure 24). This model would achieve improved flexibility in use of resources since it would tie projects only to resource availability and not to any particular geographic location based on history. Consolidating to a regional management concept would not only maximize flexibility, but would improve project-to-talent matching, facilitate consolidation of training and would eliminate duplicate trade management.

In order to get a more complete picture of performance improvement that the changes to the architecture and the change to Mission Funding have brought about, future research should study areas where efficiencies are likely to appear. Measurements should be made in the following: a) reduction in number of personnel performing overhead functions, b) decrease in the backlog of maintenance aboard ships assigned to the Northwest, c) the amount of excess material, and d) other areas where productivity and financial data may become available.

The advantages of the Intrapreneuring concept as an alternative funding scheme should be the subject of future research. Specific recommendations could then be made as to whether and how to proceed with a pilot program.

APPENDIX A: INTERVIEW QUESTIONS

Research Question

1. How does each funding scheme affect the decisions that are made at each level of the organization?

Interview Questions

1.a. What decisions that were previously made at a higher level are now made at this level due to the change to mission funding?

1.b. What decisions that were previously made at a lower level are now made at this level due to the change to mission funding?

1.c. What decisions no longer have to be made at all due to the change to mission funding?

1.d. What new decisions have to be made due to the change to mission funding?

Research Question

2. What human and organizational behaviors interact with the funding schemes?

Interview Question

2.a. Have there been any noticeable changes in the attitude toward and practice of sharing of resources and the sharing of information since mission funding was established?

Research Question

3. What actions are allowed or prohibited under each funding scheme?

Interview Questions

3.a. What is allowed to be done under mission funding that was not allowed under working capital?

3.b. What is prohibited under mission funding that had been allowed under working capital?

Research Question

4. What actions are facilitated or hindered under each funding scheme?

Interview Questions

4.a. What is easier to get done because of mission funding?

4.b. What is harder to get done because of mission funding?

Research Question

5. What natural performance improvement tendencies exist under each scheme?

Interview Questions

5a. What motivates you to improve your performance?

5b. Under working capital, what would happen if records showed that you got your task done below your estimated number of man-hours?

5c. Regarding the previous question, have things changed under mission funding?

Research Question

6. How does funding scheme affect delegation of authority and decentralization?

Interview Question

6a. Do you have more or less authority under mission funding (i.e., do you have to ask permission more or less frequently)?

Research Question

7. What is the lowest level that decisions can be made under each funding scheme?

Interview Questions

[The answer to this can be developed from the answers from interview questions 1.a. – 1.d.]

Research Question

8. How does each funding scheme affect communications across the interfaces in the organization?

Interview Questions

8.a. What organizations (code, shop, function, individual, etc.) do you no longer have any dealings with due to the change to mission funding?

8.b. What new organizations (code, shop, function, individual, etc.) do you now have dealings with due to the change to mission funding?

8.c. Have there been any changes to the dealings (communication) you have with other organizations (code, shop, function, individual, etc.). Changes could be frequency, amount of data, changes in the level of detail...etc.

APPENDIX B. ORGANIZATIONAL CHART OF INTERVIEWEES

(Persons interviewed appear in bold underline)

Customer Representative, Carrier Type Commander

100 Shipyard Commander

200 Engineering, Planning, and QA Officer

300 Operations Officer

Project Superintendent, Submarines

Assistant Project Superintendent, Submarines

400 Contracts Officer

500 Supply

600 Comptroller

Deputy Comptroller

Budget Officer

700 Cranes

800 not used

900 Production Resources Officer

Deputy Productions Resources Officer

Shop Superintendent

General Foreman Inside Shop

Foreman, Motor Regional Repair Center

1100 Admin & HR

1200 Business and Strategic Planning Officer

Deputy Business Officer

Business Manager for Benchmarking and Regional Repair Centers

Business Agent for Regional Repair Centers

Business Manager for Aircraft Carrier

Business Agent for Aircraft Carrier Overhaul

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APPENDIX C. INTERVIEW ANSWERS

The interviews were conducted using a semi-structured format with both parties having a copy of the questions in front of them. Rather than seeking restricted answers, the questions were used as a catalyst to get the thoughts flowing. Due to the informal nature of this dialogue format, what is recorded below is a description of what was said rather than exact quotes.

Research Question

1. How does each funding scheme affect the decisions that are made at each level of the organization?

Interview Questions

1.a. What decisions that were previously made at a higher level are now made at this level due to the change to mission funding?

COMPTROLLER: No change.

RESOURCE OFFICER: There are no changes due to mission funding. However, the Comptroller has imposed additional restrictions on hiring, more restrictions on when material is ordered and the rate at which money is obligated. There is more Comptroller control. The Budget Execution Control Board (BECB) decides where & when money is spent under Comptroller control/oversight

BUSINESS OFFICER: [not specifically answered]

OPERATIONS OFFICER: The Local Board of Directors now makes decisions as to what projects receive priority whereas previously, under NWCF, the Operations Officer, using CNO priority list as general guidance, made decisions of priority.

DEPUTY BUSINESS OFFICER: None

BUSINESS AGENT (for Regional Repair Centers): No change at this level, same rules – needs three conditions to exist: 1) The work must be authorized by the Type Commander, 2) There must be funds in place, 3) The maintenance activity must have the capacity to do the work.

However, at the shop level, the RRCs are now allowed to work directly with the project for schedule adjustments (within limits).

GENERAL FOREMAN (Electrical Equipment Repair): None

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): No change

CUSTOMER REPRESENTATIVE (Carriers): Money had been directly controlled by AirPac. Now it goes to PSNS directly from PacFlt.

PROJECT SUPERINTENDENT (Submarines): What has happened is that the project superintendent now has more responsibility for the decisions he has always had to make. There was a fear that there would be less cost visibility, but the reality is that there is cost visibility.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): [Not specifically answered]

BUDGET OFFICER: The level at which decisions are made has not changed but the processes have changed. Under NWCF, the funding documents went from the Type Commanders to the Fleet Comptroller, then to PSNS. Now under mission funding, because the Fleet Comptroller pre-pays for all labor for the entire year, he is essentially out of the picture when it comes to the business events during the course of the year. Work is negotiated between the Type Commander and PSNS&IMF Business Office. Tracking expenditures has increased flexibility. However, with submarines, the former funding documents were good for the Submarine Type Commander whereas now, new miscellaneous work is negotiated at a lower level, between the squadron and the Maintenance Activity.

1.b. What decisions that were previously made at a lower level are now made at this level due to the change to mission funding?

COMPTROLLER: No change

RESOURCE OFFICER: [not specifically answered]

BUSINESS OFFICER: More high-level direction is given to workload decisions.

OPERATIONS OFFICER: More attention is made at the Operations Officer level to managing overtime used. Previously, under NWCF, the shop superintendents were given an allocation that they managed themselves. There is now an Overtime Control Board that manages the overtime used by the entire command, including all sites.

DEPUTY BUSINESS OFFICER: Decisions that went up a level are schedule and workload prioritization that used to be done by PSNS are now at the LBOD.

BUSINESS AGENT (for Regional Repair Centers): No change.

GENERAL FOREMAN (Electrical Equipment Repair): The decision whether or not to accept new work has been elevated above this position.

For work that is done in support of a different shop, costs for material is billed to the requesting shop.

Although labor is paid for, unique job order numbers identify the work for historical purpose.

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): Project budget is now made at a higher level.

CUSTOMER REPRESENTATIVE (Carriers): [not specifically answered]

PROJECT SUPERINTENDENT (Submarines): Budgeting decisions formerly made by Type Commander are now made at the Fleet level.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): [Not specifically answered]

BUDGET OFFICER: With the establishment of the LBOD, work prioritization decisions were elevated to the stakeholders. However, this has frustrated the process. The decisions do not come quickly. There are too many folks in the room – too bureaucratic.

There has been a change in the policy for guaranteed work. It was formerly covered by the NIF manual. Now it is an LBOD issue where formerly it had been a Shipyard issue.

1.c. What decisions no longer have to be made at all due to the change to mission funding?

COMPTROLLER: Certain processes are no longer needed, but in general, no significant change.

RESOURCE OFFICER: [not specifically answered]

BUSINESS OFFICER: [not specifically answered]

OPERATIONS OFFICER: No longer have to get funding document from Type Commander, which involved negotiating a cost, in order to start work on an emergent job. Now the maintenance activity can shift workforce and start work quickly.

DEPUTY BUSINESS OFFICER: Fixed price no longer has to be negotiated. Stabilized man-day rates do no have to be calculated.

BUSINESS AGENT (for Regional Repair Centers): No longer have to build a separate budget for Pacific Fleet for the RRCs. The RRCs are part of the CP for PSNS&IMF.

GENERAL FOREMAN (Electrical Equipment Repair): [not specifically answered]

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): No longer have to publish a formal estimate.

CUSTOMER REPRESENTATIVE (Carriers): [not specifically answered]

PROJECT SUPERINTENDENT (Submarines): It should be easier to take on new work after the work that has been budgeted for is complete. However, the projects have not been beating their budgets, so this has not yet happened.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): Not much change

BUDGET OFFICER: None, the same decisions have to be made.

1.d. What new decisions have to be made due to the change to mission funding?

COMPTROLLER: More local decisions must be made in order to stay within budgetary controls. Must now aim to obligate the funding early so as to reduce “at risk” committed funds.

RESOURCE OFFICER: More training is available.

BUSINESS OFFICER: New attention in the areas of: Workload management, Fleet priorities, Dealing with reimbursable work, sending people off station

OPERATIONS OFFICER: Under mission funding, whenever new work is taken on, there is now a decision that has to be made as to what work, that had been planned to be done later that fiscal year, must be deferred into the next or later fiscal year.

Because of the limit on overtime, a decision has to be made on how to apportion it in order to best meet priorities.

DEPUTY BUSINESS OFFICER: Most are about the same. How to fund guarantee work is a new decision.

BUSINESS AGENT (for Regional Repair Centers): Now the RRC must compete for funding and manning.

GENERAL FOREMAN (Electrical Equipment Repair): [not specifically answered]

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): Work screening is different – Business agent helps decide how to get new work done under fixed budget. Charging for contractor work to material budget must be done carefully. The paperwork involved in dealing with other Navy repair activities is different because of the different funding scheme and different claimant in some cases.

CUSTOMER REPRESENTATIVE (Carriers): [not specifically answered]

PROJECT SUPERINTENDENT (Submarines): With a fixed material budget, ordering of material needs to be done more carefully. Overspending can have negative consequences that show up locally.

Must zero the books every fiscal year. This is a big difference of a Mission Funded project that spans fiscal years from a NWCF project where one did not have to differentiate money budgeted over the entire project over its whole timeline.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): [Not specifically answered]

BUDGET OFFICER: Now we have to be very careful that the right thing is funded by the proper appropriation. (e.g., cannot charge for extra students from another command since the teacher is already paid for through mission funding).

Research Question

2. What human and organizational behaviors interact with the funding schemes?

Interview Questions

2.a. Have there been any noticeable changes in the attitude toward and practice of sharing of resources and the sharing of information since mission funding was established?

COMPTROLLER: Mission funding is often a scapegoat for such occurrences as shop store outages and loss of flexibility to spend wherever, whenever desired. There is only a slow realization that mission funding is like a checkbook and not a credit card.

RESOURCE OFFICER: More difficult to share resources with NWCF activities like Norfolk Naval Shipyard and Naval Undersea Warfare Center Keyport.

BUSINESS OFFICER: A lot of improvement in attitude. Need a consolidated WARR. A lot of resource sharing.

OPERATIONS OFFICER: At Pearl Harbor there was a noticeable change in the attitude of the workforce in that, as time went on under mission funding, they less and less considered ship repair as a business. They had no real incentive for doing better at their jobs. They had reached a comfort level.

Under mission funding, the comptroller has the power to make budget decisions that affect the operations even though he may be the least knowledgeable of the decision makers on how the maintenance operation actually functions. At PSNS&IMF, the budget decisions are now made by the BECB, which is made up of a group of individuals who collectively represent the most complete knowledge of the maintenance operation. The BECB meets with comptroller who sets overall limits and acts as an advisor. Pearl Harbor still has the comptroller make the budget decisions without the benefit of a BECB.

DEPUTY BUSINESS OFFICER: There is still a capability plan that has to be developed. There is still 60 percent of the work that is reimbursable, 55 percent next year. There are still funds and Job Orders that go back and forth between PSNS (Bremerton) and IMF (Bangor). However, sharing of workforce personnel has improved.

BUSINESS AGENT (for Regional Repair Centers): No change with respect to the RRCs.

GENERAL FOREMAN (Electrical Equipment Repair): There is a little resistance, fear of the unknown. GF felt that the changes involved with mission funding had not been adequately explained at the lowest level and that there is even uncertainty at mid-level management. There is a feeling that at other activities under mission funding there is little motivation to fill in time with meaningful work when main line jobs are unavailable. There is dislike for the announcement of lower overtime being available. However, due to the current workload, overtime is at pre-mission funding levels in this shop.

Material ordering decisions are affected. Under mission funding, money is drawn immediately at the time the material is ordered. With NWCF, on the other hand, money is not drawn until the material is actually used. This had allowed ordering extra material to avoid running out, for convenience of ordering less often, or in order to take advantage of a bargain price. Material would be held in shop stores until it was used on a job, at which time the project was billed for it.

FOREMAN (Motor Regional Repair Center): There was initial concern at the thought of the change, but that evaporated as time went on and it became apparent that the change to mission funding would not affect the way work had been traditionally conducted at the Motor RRC.

BUSINESS AGENT (for Carrier Overhaul): The process of sharing resources between PSNS and IMF has not changed.

CUSTOMER REPRESENTATIVE (Carriers): Flexibility has been demonstrated by the return to Pacific Fleet of 4,000 man-days originally budgeted for carrier work. Pacific Fleet was able to redirect those man-days to submarine work that was needed.

PROJECT SUPERINTENDENT (Submarines): Sharing of resources between Mission Funded activities is seamless. By the repair activities being aligned under the Fleet, the employees now are beginning to feel that they are a part of the fleet.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): Resources are more readily moved to higher priority projects. A carrier project drew resources from a submarine project – hard to assess effect, hard to predict outcome.

Saw a big difference in material ordering/ allocations. More critical with quarter by quarter funding limits. However, did not see a change in contingent ordering – was not aware of any contingency ordering in NWCF either.

BUDGET OFFICER: Managers haven't change their way of thinking yet. They still think their job is to hire workers and it is the comptroller's job to come up with the money to pay them.

Schedule and not funding scarcity seems to still rule some shop superintendents. One was told to stop work because the funding had run out. He refused! He said that he had a schedule to meet. And so, because the job order was closed to further charging, the he came up with a work-around by charging the still unfinished job to "rework." [I don't believe any disciplinary action was ever taken against this shop superintendent.]

The shop personnel are used to just charging ahead until the job is finished because they are used to working under NWCF where all that would happen with cost overruns was that a negative NOR would result at the end of the year. Don't know if shipyard policies have changed enough to manage the discipline required to work under mission funding. Problems are still being fixed without going through the system & so the system isn't really being tested and shown where change to the system is needed.

Research Question

3. What actions are allowed or prohibited under each funding scheme?

Interview Questions

3.a. What is allowed to be done under mission funding that was not allowed under working capital?

COMPTROLLER: There is ability to use OMN funds with flexibility to shift money among projects, overtime, travel, and employee performance awards.

RESOURCE OFFICER: [no specific answer given]

BUSINESS OFFICER: Workforce is now allowed to work on any project – especially good for emergent work and good flexibility for the Fleet Response Plan.

OPERATIONS OFFICER: Under mission funding, new work can start very rapidly. The type commanders do not like this change. However, the fleet operators really like it. Sponsors get fenced funds through the Financial Management Board (FMB). There is no "Sponsor purity" in that control of those "fenced" funds does not stay with the Type commanders, but can be shifted by the maintenance providers under Fleet & LBOD direction based on current overall fleet mission needs.

DEPUTY BUSINESS OFFICER: Now may freely share resources under the same claimant. There is more latitude due to a single funding document from Fleet – spending is still tracked down to the individual availability. Now, if there are any funds left over, they can be spent on training, facility/equipment maintenance or other. Now can go right to work on emergent jobs – not so under working capital- needed a funding document.

BUSINESS AGENT (for Regional Repair Centers): There is more latitude to accept work – the positive side of competing for resources.

GENERAL FOREMAN (Electrical Equipment Repair): Support labor can be supplied without billing- under mission funding it is already paid for.

During slack time, can assign workers to odd jobs around the shop that need to be done such as cleaning, repair, and maintenance of shop equipment.

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): Although the NOR gains and losses accounting is gone, still use the same accounting for project budget (reserve, sales, etc.)

CUSTOMER REPRESENTATIVE (Carriers): [not specifically answered]

PROJECT SUPERINTENDENT (Submarines): PSNS had been very successful in working to get a positive NOR.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): As the funding changed, the project adapted and went on without much impact.

BUDGET OFFICER: Under mission funding, a reimbursable project when it takes on new or growth work that tends to lengthen its schedule, it may take some of its package of general work, such as painting, and try to push it into a subsequent maintenance period, which would take from being reimbursed to having to come out of the mission budget for the year. This would be work that hadn't been planned to be done under mission funding, and so some other work, perhaps even on another ship would not get done that year.

3.b. What is prohibited under mission funding that had been allowed under working capital?

COMPTROLLER: Overspending is not allowed – because there is no carry-over, ongoing projects must be funded by new money at the beginning of the fiscal year if work is to continue.

RESOURCE OFFICER: Continuing to work past fixed price. Replenishing shop stores after budget has been spent for the year.

BUSINESS OFFICER: Can't make money, whereas under WC can make money after fixed price is negotiated. WC is a sponge that absorbs profit or loss- can fund SRM projects. With Mission funding on the other hand, you get your budgets and that is all you get. No carry over.

OPERATIONS OFFICER: Running out of money is prohibited under mission funding, whereas under working capital a project could incur a loss. Under mission funding the project must stop work whenever funds run out, whereas under working capital the project could keep working and run up a tab.

DEPUTY BUSINESS OFFICER: Cannot fix-price the projects. Cannot send funding documents to IMF Bangor or Pearl Harbor Naval Shipyard because they are under the same claimant, Pacific Fleet, who now distributes funds. There is no variation calculated for stabilized man-day rate, only actual cost of direct labor is used

BUSINESS AGENT (for Regional Repair Centers): Cannot broker-in new work. Cannot solicit new work.

GENERAL FOREMAN (Electrical Equipment Repair): Stocking up on material (as mentioned above).

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): Under mission funding there is control over material ordering and overtime use. Cannot transfer cost of contingent material from one project to another.

CUSTOMER REPRESENTATIVE (Carriers): Must live within the control [budget limit of man-days and material] and screen the maximum amount of work that can be done within that budget.

PROJECT SUPERINTENDENT (Submarines): May not go over budget.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): [Not specifically answered]

BUDGET OFFICER: The expenditure of funds is still tied to particular congressional appropriations & so must be careful of how much work can be done on each type of ship.

Research Question

4. What actions are facilitated or hindered under each funding scheme?

Interview Questions

4.a. What is easier to get done because of mission funding?

COMPTROLLER: Comptroller functions, such as accounting, are procedurally easier.

RESOURCE OFFICER: Training, flexibility in overhead, process improvements, quality improvements, safety improvements

BUSINESS OFFICER: Emergent work, CasReps, high priority, RATA, - better for the surface ships.

OPERATIONS OFFICER: It is easier to start new work

If there is a surplus of funds after the scheduled work is completed, it is easier under mission funding to use the funds on unfunded requirements such as acquiring tools and equipment that have long been on an unfunded list.

DEPUTY BUSINESS OFFICER: Emergent work.

BUSINESS AGENT (for Regional Repair Centers): With the RRC's a system of "Virtual Mission Funding" was set up and running for several years prior to PSNS going mission funding. Under Virtual Mission Funding, expenses of the RRC had been paid for at the beginning of the fiscal year by contributions of each Type Commander, based on their predicted work load. In the shop itself, workers were not segregated as to what project they work on – they worked in the most efficient way as a team working on all Type equipment together. Because of this Virtual Mission Funding experience, the transition to mission funding has been very easy.

GENERAL FOREMAN (Electrical Equipment Repair): No big changes other than working with pre-paid labor already mentioned.

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): Too early to tell. There is no 50 percent review to prepare for nor is there a monthly Financial Cost Estimate as there was under NWCF.

CUSTOMER REPRESENTATIVE (Carriers): [not specifically answered]

PROJECT SUPERINTENDENT (Submarines): Flow of resources among Mission Funded activities is easier – may have to pay for travel and per diem for the borrowed personnel. A lot of the business processes, such as submitting a Final Review Estimate, have not changed.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): Day to day work is about the same, same paper/computer work and job tracking (COAR, SWLN, etc.). The change has been transparent to General Foreman level and below.

Customer now has the opportunity to come back for unspent funds to be used on other work.

BUDGET OFFICER: It is easier to get a response to breakdowns that occur on operational ships (CASREPs).

4.b. What is harder to get done because of mission funding?

COMPTROLLER: Nothing is harder because of mission funding.

RESOURCE OFFICER: Accounting for everything, obtaining tools and plant operating equipment because they compete with funds for production material, overtime, and travel.

BUSINESS OFFICER: Nothing is really any harder. It is harder to get money for SRM, Facilities, overtime, and material.

OPERATIONS OFFICER: Very little is harder to get done because of mission funding (Operations officer mentioned that this was also true with his experience at Pearl Harbor in

the positions of Planning and Engineering Officer, and Resources Officer). Mission funding often gets unjustifiably blamed.

DEPUTY BUSINESS OFFICER: Accounting, contracting due to different man-day rate (actual vs stabilized makes trade-off more costly). Temporarily there is a convoluted accounting of transitioning working capital projects. It is harder to react to change due to poor performance or growth or new work. Still can have many funding documents on the same ship.

BUSINESS AGENT (for Regional Repair Centers): Cannot shift funding between ship type. Print requests must now go through business agent. Packing and crating require separate funding document for each ship type – used to have a master budget.

GENERAL FOREMAN (Electrical Equipment Repair): [not specifically answered.]

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): Under NWCF, the budget for the overhaul had been built from the bottom up. That is, starting with the work that was desired to be accomplished during that overhaul, estimates of the cost to perform that work would be compiled into a final price that would be charged the customer. Now, under Mission Funding, the budget is built from the top down, that is, the number of man-days and budget for material (includes overtime and contracts) is set and the business agent needs to build a work package that will match the pre-set budget.

Under mission funding, the Final Review Estimate letter was difficult to write because of the different way the budget for the overhaul was developed.

Accounting forms were more difficult due to the transition period. Items had to be tracked using multiple tracking numbers. Accounting for material that had been ordered under NWCF (obligation status) had to be converted to the mission funding system (expenditure status).

Under mission funding, material ordering for the project had to be shut down three times.

Travel is harder. Over-obligation and over-commit looks like over-expend.

Must keep up on reconciling. There is additional work due to STARS entries.

No change with respect to Cost Reimbursable work.

CUSTOMER REPRESENTATIVE (Carriers): It is too early to tell if anything is really harder because there is a lot of work required in just getting used to the new system of funding. Mission funding does require more frequency in reporting and tracking.

PROJECT SUPERINTENDENT (Submarines): Nothing is really harder to get done directly because of Mission Funding. However, there are resistance to change and misconceptions regarding the differences between Mission Funding and NWCF. There is some difficulty because of the transition itself, not inherent to the funding scheme.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): Reimbursable and Mission Funded work mix makes it harder for workload forecasting. Also, unplanned work added to the project affects the workload forecast and causes the spending rate to go up. This requires adjustments to be made.

Decisions are slower at the higher levels due to consideration of budget for material.

During a TDY to Pearl Harbor Naval Shipyard (PHNSY), saw that they were looking at furloughs for some of their workforce at the end of the fiscal year. Also at PHNSY, saw that adding new work was slow.

At PSNS, there is a New Work Acceptance Committee (NWAC) to which a good case for adding new work must be made before the work will be approved. This involves careful and timely communication because during the course of the project where the boat is in a certain stage of disassembly, performing the new work at a certain time can be much less costly than at a later time in the project.

Unfunded technical requirements that must be completed before the boat can be certified ready for sea drive up costs and can impact other funded work.

Observed that the business office is most affected with the change to mission funding.

BUDGET OFFICER: Under NWCF, there was a corporate tax that funded NAVSEA initiatives. This came as surcharge to the stabilized man-day rate. Now, with Fleet providing mission funding, the opportunity for that surcharge is gone, but NAVSEA still wants to have PSNS&IMF pay for programs, such as Lean, that it wants to institute throughout the shipyards. Fleet, being the entity that foots the bill, want to have buy-in on those programs. The situation is further complicated by the fact that the commander of PSNS&IMF is primary duty to NAVSEA.

Still have to report cost of depot work to the Office of the Secretary of Defense. This was a stipulation of Program Budget Decision 700, which authorized the mission-funding pilot. However, what had been easy under NWCF is now difficult. Under NWCF cost was based on the stabilized man-day rate, which took direct labor hours that were charged to a depot level project and factored in an amount that accounted for indirect labor as well as all other overhead costs. This was automatically done in the course of business. Now, under mission funding, the customer is no longer charged by a stabilized man-day rate and so the real cost of the project must be calculated by hand.

Similarly, under the Financial Management Regulation, non-US government work, such as for the State of Washington, must also be done at cost. Without the stabilized man-day rate, the charge for overhead must be calculated by hand.

There is a completely new budgeting process that is not yet well defined. Under NWCF a workload was given, we estimated the amount of money required, and asked for it. Now, under mission funding, there are new forms, workload is given by both NAVSEA and the Fleet, the Capabilities plan is submitted to both, and there is a mix of cost reimbursable as well as Mission Funded work. NAVSEA 04 is actively involved, but their role is not well defined. Last year when the mission-funded budget was put together there was open communications among OPNAV N43, Pacific Fleet N43, and PSNS. This year NAVSEA 04 has been inserted into the process to define reimbursable work and eliminated the direct link with OPNAV N43 with no perceived value added.

Regarding new work, under NWCF, if the customer had money and the maintenance activity had capacity, the work could be done. Now, under mission funding, if the customer wants to add work, there must be a schedule shift. NAVSEA 04 will get involved and add its constraints, complicating the former simple process. [This is a decision point that has gone up a level.]

Research Question

5. What natural performance improvement tendencies exist under each scheme?

Interview Questions

5a. What motivates you to improve your performance?

COMPTROLLER: If we improve our performance better than the budget, we can use the money in other areas that need it, such as retooling, training, annual leave, or doing additional work on ships. All of these are good for the Navy.

RESOURCE OFFICER: No differences noted.

BUSINESS OFFICER: The strategic reason for going to mission funding is that CNO wanted to get the money under CNO control in order to balance with fleet needs. In the long run, employee numbers are easier to change, taking the control away from NAVSEA.

OPERATIONS OFFICER: Under mission funding, the overall maintenance system as a whole can be challenged to improve by either a challenge to do better (a challenge to complete the total year's mission below budget) or a requirement to improve (where the budget is reduced up front). Under working capital, on the other hand, the focus would have been on individual projects, and the opportunities to improve the system would have been less recognized.

DEPUTY BUSINESS OFFICER: Improved performance will allow resources to become available for equipment/facility maintenance and training.

BUSINESS AGENT (for Regional Repair Centers): The overall mission of getting Sailors to sea safely

GENERAL FOREMAN (Electrical Equipment Repair): Because of known limitations on mission-funded labor, there is a drive to streamline processes and cut waste. Accounting is much closer. This results in more drive to keep within budget (e.g., at the 50 percent review of each job).

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): Motivation is to support the Capability Plan. To stay within the man-day limit with a clear goal that everyone can agree upon. Can negotiate to add or subtract work or increase man-days. AirPac and PSNS upper management talk to the project more often to see how it is progressing. In the past, reporting was more vague & work could be added.

CUSTOMER REPRESENTATIVE (Carriers): [not specifically answered]

PROJECT SUPERINTENDENT (Submarines): Motivation comes from performance being measured against a set budget. Also you know that your inefficiencies will negatively affect other projects resulting in less overall maintenance being accomplished.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): The funding scheme is not visible to the production workers, they just want to get the boat completed.

BUDGET OFFICER:

5b. Under working capital, what would happen if records showed that you got your task done below your estimated number of man-hours?

COMPTROLLER: Under working capital, completing work below budget would mean the money would go to the NOR account. The downside is that this amount of money would not be available to the fleet for operations whereas under mission funding it could have been.

RESOURCE OFFICER: Performance measurement system has not changed at the deck plate level.

BUSINESS OFFICER: [not addressed]

OPERATIONS OFFICER: There is a myth that if a job is completed in less time than the official estimate that the official estimate will be reduced the next time that job comes up. Statistics do not show this to be true no matter whether mission or working capital funding. There are only rare instances where the “learning curve” in fact goes down. What is required to have a downward learning curve is having the same people repeat the very same job on an identical ship. One case where the learning curve went down was when a particular team stayed together to perform a standardized alteration on several TRIDENT submarines, which had a high level of configuration control.

DEPUTY BUSINESS OFFICER: If we spent too it was visible for all to see.

BUSINESS AGENT (for Regional Repair Centers): No change because of past work under Virtual Mission Funding.

GENERAL FOREMAN (Electrical Equipment Repair): If a particular job is worked consistently below estimate for two or three consecutive instances, the planners will reduce the official estimate for that job.

FOREMAN (Motor Regional Repair Center): Estimates had been drastically reduced, but Foreman did not know the cause. He assumed it was an engineered change rather than strictly an empirical one. Because of the low estimates, the RRC works consistently 15 percent to 25 percent above estimate. [Note that the estimate is applied by the planner from a set of standards.]

BUSINESS AGENT (for Carrier Overhaul): Not specifically answered.

CUSTOMER REPRESENTATIVE (Carriers): [not specifically answered]

PROJECT SUPERINTENDENT (Submarines): Under NWCF, projects were often desensitized, or insulated from the results of their spending decisions.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): [Not specifically answered]

BUDGET OFFICER:

5c. Regarding the previous question, have things changed under mission funding?

COMPTROLLER: Comptroller's office may eventually reduce in size.

RESOURCE OFFICER: [see above – no change]

BUSINESS OFFICER: [not addressed]

OPERATIONS OFFICER: [In 5b.]

DEPUTY BUSINESS OFFICER: Costs can be masked. Material, process shop not visible.

BUSINESS AGENT (for Regional Repair Centers): No change.

GENERAL FOREMAN (Electrical Equipment Repair): Still true.

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): The project staff have not changed their mindset yet. They still tend to anticipate material or equipment contingencies by ordering more than they actually need and use up the material budget.

CUSTOMER REPRESENTATIVE (Carriers): [not specifically answered]

PROJECT SUPERINTENDENT (Submarines): If one project is spending at a lower-than-expected rate, Fleet can temporarily redirect unused funds to different a high priority project.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): [Not specifically answered]

BUDGET OFFICER:

Research Question

6. How does funding scheme affect delegation of authority and decentralization?

Interview Questions

6a. Do you have more or less authority under mission funding (i.e., do you have to ask permission more or less frequently)?

COMPTROLLER: More authority, along with legal responsible party status under public law 31USC 1571. Can now authorize shifting funds, but now responsible for any violations of the rules governing such shifts.

RESOURCE OFFICER: The same amount of authority

BUSINESS OFFICER: Fleet approval is required more. Business office has less authority to manage accounts. Decisions have gone up a level. [increase in centralization]

OPERATIONS OFFICER: No change

DEPUTY BUSINESS OFFICER: No difference. For this position, it is personality driven and does not have to do with funding scheme.

BUSINESS AGENT (for Regional Repair Centers): A little less authority – now deals through Comptroller instead of directly with customer – like adding a “reduction gear” to the system.

GENERAL FOREMAN (Electrical Equipment Repair): No difference.

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): Less authority. Comptroller has more. Business Agent no longer signs funding document, but is still considered to be the funds administrator. Now must go through Comptroller for such things as purchasing parts from Norfolk Naval Shipyard.

CUSTOMER REPRESENTATIVE (Carriers): Less because the money budgeted for repair goes directly to the repair activity without going through AirPac.

PROJECT SUPERINTENDENT (Submarines): Same authority, but more responsible, more accountable. Potential new work could be decided at project level but could take away resources from higher priority work elsewhere.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): More responsibility/accountability for spending at the individual level.
The Supply Officer exhibits more ownership over material ordering, ensuring that duplicate ordering does not occur.

BUDGET OFFICER: [Not specifically answered]

Research Question

7. What is the lowest level that decisions can be made under each funding scheme?

Interview Questions

[The answer to this can be developed from the answers from interview questions 1.a. – 1.d.]

Research Question

8. How does each funding scheme affect communications across the interfaces in the organization?

Interview Questions

8.a. What organizations (code, shop, function, individual, etc.) do you no longer have any dealings with due to the change to mission funding?

COMPTROLLER: No change because this funding scheme change is still a pilot and must be prepared to switch back to NWCF if instructed to do so. May change after pilot period is over.

RESOURCE OFFICER: No change

BUSINESS OFFICER: No change

OPERATIONS OFFICER: No change – has always stayed connected with Fleet as well as NAVSEA.

DEPUTY BUSINESS OFFICER: No change.

BUSINESS AGENT (for Regional Repair Centers): No longer deal directly with the offices of the type commanders.

GENERAL FOREMAN (Electrical Equipment Repair): The same ones.

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): About the same.

CUSTOMER REPRESENTATIVE (Carriers): No change

PROJECT SUPERINTENDENT (Submarines): No change

ASSISTANT PROJECT SUPERINTENDENT (Submarines): No change.

BUDGET OFFICER: No change

8.b. What new organizations (code, shop, function, individual, etc.) do you now have dealings with due to the change to mission funding?

COMPTROLLER: Now deal with Fleet comptroller staff. They are “wired” into PSNS&IMF comptroller staff, watching obligation rates.

LBOD, BECB.

RESOURCE OFFICER: Now have BECB to help Comptroller with spending decisions

BUSINESS OFFICER: More organizations involved.

OPERATIONS OFFICER: [LBOD, BECB]

DEPUTY BUSINESS OFFICER: No change.

BUSINESS AGENT (for Regional Repair Centers): Comptroller

GENERAL FOREMAN (Electrical Equipment Repair): Shop planners who used to be Shop 51 employees are now under Code 909 and are resourced back to Shop 51.

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): No new organizations.

CUSTOMER REPRESENTATIVE (Carriers): No change.

PROJECT SUPERINTENDENT (Submarines): No change.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): [Not specifically answered]

BUDGET OFFICER: [Not specifically answered]

8.c. Have there been any changes to the dealings (communication) you have with other organizations (code, shop, function, individual, etc.). Changes could be frequency, amount of data, changes in the level of detail...etc.

COMPTROLLER:[Contained in other answers]

RESOURCE OFFICER: [Noted that the increase in Fleet control is more important to the recent changes than the particular funding scheme choice – could have also worked under NWCF. Also noted that mission funding can be risky at the fiscal year end.]

BUSINESS OFFICER: More communication with Type Commanders.

OPERATIONS OFFICER: Deal much more with Comptroller, slightly less with type commanders.

DEPUTY BUSINESS OFFICER: Comptroller has a stronger role. Finding the information necessary for accounting takes more work. Now, with the LBOD, there are more metrics. There are three bosses: NAVSEA 04, NAVSEA 08, and Pacific Fleet. Although Pacific Fleet pays for everything, NAVSEA 08 and 04 still dictate how the shipyard is operated.

BUSINESS AGENT (for Regional Repair Centers): Deal more with the comptroller. NAVICP now handles some of SUBPAC funds for parts and equipment.

GENERAL FOREMAN (Electrical Equipment Repair): Deal with shop requesting support work to record time only, no billing takes place.

Shop 51 must now take the cost of material for parts manufacturing out of its own (Shop 51) material budget. These parts go into the supply system. Feels that Shop 51 should quickly place an order to supply for the parts it has manufactured & “paid for” so that it will benefit from the material cost [Gaming the system]

Other comment: From mid-level management to the worker level feel that they haven’t been fully trained/informed on all the changes and expectations with regard to how mission funding is supposed to work at their levels.

FOREMAN (Motor Regional Repair Center): No change

BUSINESS AGENT (for Carrier Overhaul): Now dealing with Comptroller on spending rate and rollover of funding from NWCF to Mission Funding. Works very closely in support of Comptroller Office.

Dealing more and more directly with AirPac. AirPac had been an approval step, but now AirPac directly checks on progress and goes through the LBOD for prioritizing their work.

Business Agent has less contact with Project Superintendent and with C. 300.

CUSTOMER REPRESENTATIVE (Carriers): More interface with the comptroller.

PROJECT SUPERINTENDENT (Submarines): Comptroller is more controlling, watching more closely – a good thing.

ASSISTANT PROJECT SUPERINTENDENT (Submarines): There is a lot more contact with the Business Office on a day-to-day basis. They are interested in project status and spending rate.

There is additional contact with the New Work Acceptance Committee because any unplanned work must be weighed against the priority list of all work on all projects.

BUDGET OFFICER: Not specifically answered.

APPENDIX D. AGGREGATED INTERVIEW ANSWERS

Organizational Map of Interview Question 1: “How does funding scheme affect the decisions that are made at each level of the Organization?”

Customer Representative, Carrier Type Commander: *AirPac had directly controlled Money. Now it goes to PSNS directly from PacFlt.*

100 Shipyard Commander

200 Engineering, Planning, and QA Officer

300 Operations Officer: *The LBOD now makes decisions as to what projects receive priority whereas previously, under NWCF, the Operations Officer, using the CNO priority list as general guidance, made decisions of priority. More attention at the Operations Officer level to managing overtime used. Previously, under NWCF, the shop superintendents were given an allocation that they managed themselves. There is now an Overtime Control Board that manages the overtime used by the entire command, including all sites. No longer have to get funding document from Type Commander, which involved negotiating a cost, in order to start work on an emergent job. Now the maintenance activity can shift workforce and start work quickly. Under mission funding, whenever new work is taken on, there is now a decision that has to be made as to what work, that had been planned to be done later that fiscal year, must be deferred into the next or later fiscal year. Because of the limit on overtime, a decision has to be made on how to apportion it in order to best meet priorities.*

Project Superintendent, Submarines: *What has happened is that the project superintendent now has more responsibility for the decisions he has always had to make. There was a fear that there would be less cost visibility, but the reality is that there is cost visibility. Budgeting decisions formerly made by Type Commander are now made at the Fleet level. It should be easier to take on new work after the work that has been budgeted for is complete. However, the projects have not been beating their budgets, so this has not yet happened. With a fixed material budget, ordering of material needs to be done more carefully. Overspending can have negative consequences that show up locally. Must zero the books every fiscal year. This is a big difference of a Mission Funded project that spans fiscal years from a NWCF project where one did not have to differentiate money budgeted over the entire project over its whole timeline.*

Assistant Project Superintendent, Submarines: *Not much change.*

400 Contracts Officer

500 Supply

600 Comptroller: *Decisions made at this level under NWCF are still made at this level under Mission Funding. More local decisions are made at this level in order to stay within budgetary controls. Must now aim to obligate the funding early so as to reduce “at risk” committed funds.*

Deputy Comptroller

Budget Officer: *The level at which decisions are made has not changed but the processes have changed. Under NWCF, the funding documents went from the Type Commanders to the Fleet Comptroller, then to PSNS. Now under mission funding, because the Fleet Comptroller pre-pays for all labor for the entire year, he is essentially out of the picture when it come to the business events during the course of the year. Work is negotiated between the Type Commander and PSNS&IMF Business Office. Tracking expenditures has increased flexibility. However, with submarines, the former funding documents were good for the Submarine Type Commander whereas now, new miscellaneous work is negotiated at a lower level, between the squadron and the Maintenance Activity. With the establishment of the LBOD, work prioritization decisions were elevated to the stakeholders. However, this has frustrated the process. The decisions do not come quickly. There are too many folks in the room – too bureaucratic. There has been a change in the policy for guaranteed work. It was formerly covered by the NIF manual. Now it is an LBOD issue where formerly it had been a Shipyard issue. Now we have to be very careful that the right thing is funded by the proper appropriation. (e.g., cannot charge for extra students from another command sine the teacher is already paid for through mission funding).*

700 Cranes

800 not used

900 Production Resources Officer: *There is more control by the Comptroller and the new Budget Execution Control Board with respect to hiring, material ordering and the rate at which money is obligated.*

Deputy Productions Resources Officer

Shop Superintendent

General Foreman Inside Shop: *The decision whether or not to accept new work has been elevated above this position. For work that is done in support of a different shop, costs for material is billed to the requesting shop. Although labor is paid for, unique job order numbers identify the work for historical purpose.*

Foreman, Motor Regional Repair Center: *No change at this level or below this level.*

1100 Admin & HR

1200 Business and Strategic Planning Officer: *More high-level direction is given to workload decisions. There is more attention at this level in areas of workload management, Fleet priorities, dealing with reimbursable work, and sending people off-station.*

Deputy Business Officer: *Decisions that went up a level are schedule and workload prioritization that used to be done by PSNS are now at the LBOD. Fixed price no longer has to be negotiated. Stabilized man-day rates do not have to be calculated. How to fund guarantee work is a new decision.*

Business Manager for Benchmarking and Regional Repair Centers

Business Agent for Regional Repair Centers: *At the shop level, the RRCs are now allowed to work directly with the project for schedule adjustments (within limits). No longer have to build a separate budget for Pacific Fleet for the RRCs. The RRCs are part of the CP for PSNS&IMF. Now the RRCs must compete for funding and manning.*

Business Manager for Aircraft Carrier

Business Agent for Aircraft Carrier Overhaul: *Project budget is now developed at a higher level. No longer have to publish a formal estimate. Work screening is different – Business agent helps decide how to get new work done under fixed budget. Charging for contractor work to material budget must be done carefully. The paperwork involved in dealing with other Navy repair activities is different because of the different funding scheme and different claimant in some cases.*

Organizational Map of Interview Question 2: “What human and organizational behaviors interact with the funding schemes?”

Customer Representative, Carrier Type Commander: Flexibility has been demonstrated by the return to Pacific Fleet of 4,000 man-days originally budgeted for carrier work. Pacific Fleet was able to redirect those man-days to submarine work that was needed.

100 Shipyard Commander

200 Engineering, Planning, and QA Officer

300 Operations Officer: *At Pearl Harbor there was a noticeable change in the attitude of the workforce in that, as time went on under mission funding, they less and less considered ship repair as a business. They had no real incentive for doing better at their jobs. They had reached a comfort level. Under mission funding, the comptroller has the power to make budget decisions that affect the operations even though he may be the least knowledgeable of the decision makers on how the maintenance operation actually functions. At PSNS&IMF, the budget decisions are now made by the BECB, which is made up of a group of individuals who collectively represent the most complete knowledge of the maintenance operation. The BECB meets with comptroller who sets overall limits and acts as an advisor. Pearl Harbor still has the comptroller make the budget decisions without the benefit of a BECB.*

Project Superintendent, Submarines: *Sharing of resources between Mission Funded activities is seamless. By the repair activities being aligned under the Fleet, the employees now are beginning to feel that they are a part of the fleet.*

Assistant Project Superintendent, Submarines: *Resources are more readily moved to higher priority projects. A carrier project drew resources from a submarine project – hard to assess effect, hard to predict outcome. Saw a big difference in material ordering/allocations. More critical with quarter by quarter funding limits. However, did not see a change in contingent ordering – was not aware of any contingency ordering in NWCF either.*

400 Contracts Officer

500 Supply

600 Comptroller: *Mission funding is often a scapegoat for such occurrences as shop store outages and loss of flexibility to spend wherever, whenever desired. There is only a slow realization that mission funding is like a checkbook and not a credit card.*

Deputy Comptroller

Budget Officer: *Managers haven't change their way of thinking yet. They still think their job is to hire workers and it is the comptroller's job to come up with the money to pay them. Schedule and not funding scarcity seems to still rule some shop superintendents. One was told to stop work because the funding had run out. He refused! He said that he had a schedule to meet. And so, because the job order was closed to further charging, the he came up with a work-around by charging the still unfinished job to "rework." [I don't believe any disciplinary action was ever taken against this shop superintendent.] The shop personnel are used to just charging ahead until the job is finished because they are used to working under NWCF where all that would happen with cost overruns was that a negative NOR would result at the end of the year. Don't know if shipyard policies have changed enough to manage the discipline required to work under mission funding. Problems are still being fixed without going through the system & so the system isn't really being tested and shown where change to the system is needed.*

700 Cranes

800 not used

900 Production Resources Officer: *More difficult to share resources with NWCF activities like Norfolk Naval Shipyard and Naval Undersea Warfare Center Keyport.*

Deputy Productions Resources Officer

Shop Superintendent

General Foreman Inside Shop: *There is a little resistance, fear of the unknown. GF felt that the changes involved with mission funding had not been adequately explained at the lowest level and that there is even uncertainty at mid-level management. There is a feeling that at other activities under mission funding there is little motivation to fill in time with meaningful work when main line jobs are unavailable. There is dislike for the announcement of lower overtime being available. However, do to the current workload, overtime is at pre-mission funding levels in this shop. Material ordering decisions are affected. Under mission funding, money is drawn immediately at the time the material is ordered. With NWCF, on the other hand, money is not drawn until the material is*

actually used. This had allowed ordering extra material to avoid running out, for convenience of ordering less often, or in order to take advantage of a bargain price. Material would be held in shop stores until it was used on a job, at which time the project was billed for it.

Foreman, Motor Regional Repair Center: *There was initial concern at the thought of the change, but that evaporated as time went on and it became apparent that the change to mission funding would not affect the way work had been traditionally conducted at the Motor RRC.*

1100 Admin & HR

1200 Business and Strategic Planning Officer: *A lot of improvement in attitude. Need a consolidated WARR. A lot of resource sharing.*

Deputy Business Officer: *There is still a capability plan that has to be developed. There is still 60 percent of the work that is reimbursable, 55 percent next year. There are still funds and Job Orders that go back and forth between PSNS (Bremerton) and IMF (Bangor). However, sharing of workforce personnel has improved.*

Business Manager for Benchmarking and Regional Repair Centers

Business Agent for Regional Repair Centers: *No change*

Business Manager for Aircraft Carrier

Business Agent for Aircraft Carrier Overhaul: *No change.*

Organizational Map of Interview Question 3: “What actions are allowed or prohibited under each funding scheme?”

Customer Representative, Carrier Type Commander: *Must live within the control [budget limit of man-days and material] and screen the maximum amount of work that can be done within that budget.*

100 Shipyard Commander

200 Engineering, Planning, and QA Officer

300 Operations Officer: *Under mission funding, new work can start very rapidly. The type commanders do not like this change. However, the fleet operators really like it. Sponsors get fenced funds through the Financial Management Board (FMB). There is no “Sponsor purity” in that control of those “fenced” funds does not stay with the Type commanders, but can be shifted by the maintenance providers under Fleet & LBOD direction based on current overall fleet mission needs. Running out of money is prohibited under mission funding, whereas under working capital a project could incur a loss. Under mission funding the project must stop work whenever funds run out, whereas under working capital the project could keep working and run up a tab.*

Project Superintendent, Submarines: *Under NWCF, PSNS had been very successful in working to get a positive NOR. Under mission funding, not permitted to go over budget.*

Assistant Project Superintendent, Submarines: *As the funding changed, the project adapted and went on without much impact.*

400 Contracts Officer

500 Supply

600 Comptroller: *There is ability to use OMN funds with flexibility to shift money among projects, overtime, travel, and employee performance awards. Overspending is not allowed – because there is no carry-over, ongoing projects must be funded by new money at the beginning of the fiscal year if work is to continue.*

Deputy Comptroller

Budget Officer: *Under mission funding, a reimbursable project when it takes on new or growth work that tends to lengthen its schedule, it may take some of its package of general work, such as painting, and try to push it into a subsequent maintenance period, which would take*

from being reimbursed to having to come out of the mission budget for the year. This would be work that hadn't been planned to be done under mission funding and so some other work, perhaps even on another ship would not get done that year. The expenditure of funds is still tied to particular congressional appropriations & so must be careful of how much work can be done on each type of ship.

700 Cranes

800 not used

900 Production Resources Officer: *Continuing to work past fixed price. Replenishing shop stores after budget has been spent for the year.*

Deputy Productions Resources Officer

Shop Superintendent

General Foreman Inside Shop: *Support labor can be supplied without billing- under mission funding it is already paid for. During slack time, can assign workers to odd jobs around the shop that need to be done such as cleaning, repair, and maintenance of shop equipment. Stocking up on material (as mentioned above).*

Foreman, Motor Regional Repair Center: *No change.*

1100 Admin & HR

1200 Business and Strategic Planning Officer: *Workforce is now allowed to work on any project – especially good for emergent work and good flexibility for the Fleet Response Plan. Can't make money, whereas under WC can make money after fixed price is negotiated. WC is a sponge that absorbs profit or loss- can fund SRM projects. With Mission funding on the other hand, you get your budgets and that is all you get. No carry over.*

Deputy Business Officer: *Now may freely share resources under the same claimant. There is more latitude due to a single funding document from Fleet – spending is still tracked down to the individual availability. Now, if there are any funds left over, they can be spent on training, facility/equipment maintenance or other. Now can go right to work on emergent jobs – not so under working capital- needed a funding document. Cannot fix-price the*

projects. Cannot send funding documents to IMF Bangor or Pearl Harbor Naval Shipyard because they are under the same claimant, Pacific Fleet, who now distributes funds. There is no variation calculated for stabilized man-day rate, only actual cost of direct labor is used.

Business Manager for Benchmarking and Regional Repair Centers

Business Agent for Regional Repair Centers: *There is more latitude to accept work – the positive side of competing for resources. Cannot broker-in new work. Cannot solicit new work.*

Business Manager for Aircraft Carrier

Business Agent for Aircraft Carrier Overhaul: *Although the NOR gains and losses accounting is gone, still use the same accounting for project budget (reserve, sales, etc.). Under mission funding there is control over material ordering and overtime use. Cannot transfer cost of contingent material from one project to another.*

Organizational Map of Interview Question 4: “What actions are facilitated or hindered under each funding scheme?”

Customer Representative, Carrier Type Commander: *It is too early to tell if anything is really harder because there is a lot of work required in just getting used to the new system of funding. Mission funding does require more frequency in reporting and tracking.*

100 Shipyard Commander

200 Engineering, Planning, and QA Officer

300 Operations Officer: *Under Mission Funding, it is easier to start new work. If there is a surplus of funds after the scheduled work is completed, it is easier under mission funding to use the funds on unfunded requirements such as acquiring tools and equipment that have long been on an unfunded list. Very little is harder to get done because of mission funding (Operations officer mentioned that this was also true with his experience at Pearl Harbor in the positions of Planning and Engineering Officer, and Resources Officer). Mission funding often gets unjustifiably blamed.*

Project Superintendent, Submarines: *Flow of resources among Mission Funded activities is easier – may have to pay for travel and per diem for the borrowed personnel. A lot of the business processes, such as submitting a Final Review Estimate, have not changed. Nothing is really harder to get done directly because of Mission Funding. However, there are resistance to change and misconceptions regarding the differences between Mission Funding and NWCF. There is some difficulty because of the transition itself, not inherent to the funding scheme.*

Assistant Project Superintendent, Submarines: *Day to day work is about the same, same paper/computer work and job tracking (COAR, SWLN, etc.). The change has been transparent to General Foreman level and below. Customer now has the opportunity to come back for unspent funds to be used on other work. Reimbursable and Mission Funded work mix makes it harder for workload forecasting. Also, unplanned work added to the project affects the workload forecast and causes the spending rate to go up. This requires adjustments to be made. Decisions are slower at the higher levels due to consideration of budget for material. During a TDY to Pearl Harbor Naval Shipyard (PHNSY), saw that they were looking at furloughs for some of their workforce at the end of the fiscal year. Also at PHNSY, saw that adding new work was slow. At PSNS, there is a New Work Acceptance Committee (NWAC) to which a good case for adding new work must be made before the work will be approved. This involves careful and*

timely communication because during the course of the project where the boat is in a certain stage of disassembly, performing the new work at a certain time can be much less costly than at a later time in the project. Unfunded technical requirements that must be completed before the boat can be certified ready for sea drive up costs and can impact other funded work. Observed that the business office is most affected with the change to mission funding.

400 Contracts Officer

500 Supply

600 Comptroller: *Comptroller functions, such as accounting, are procedurally easier under Mission Funding. Nothing is harder due to Mission Funding.*

Deputy Comptroller

Budget Officer: *It is easier to get a response to breakdowns that occur on operational ships (CASREPs). Under NWCF, there was a corporate tax that funded NAVSEA initiatives. This came as surcharge to the stabilized man-day rate. Now, with Fleet providing mission funding, the opportunity for that surcharge is gone, but NAVSEA still wants to have PSNS&IMF pay for programs, such as Lean, that it wants to institute throughout the shipyards. Fleet, being the entity that foots the bill, want to have buy-in on those programs. The situation is further complicated by the fact that the commander of PSNS&IMF is primary duty to NAVSEA. Still have to report cost of depot work to the Office of the Secretary of Defense. This was a stipulation of Program Budget Decision 700, which authorized the mission-funding pilot. However, what had been easy under NWCF is now difficult. Under NWCF cost was based on the stabilized man-day rate, which took direct labor hours that were charged to a depot level project and factored in an amount that accounted for indirect labor as well as all other overhead costs. This was automatically done in the course of business. Now, under mission funding, the customer is no longer charged by a stabilized man-day rate and so the real cost of the project must be calculated by hand. Similarly, under the Financial Management Regulation, non-US government work, such as for the State of Washington, must also be done at cost. Without the stabilized man-day rate, the charge for overhead must be calculated by hand. There is a completely new budgeting process that is not yet well defined. Under NWCF, a workload was given, we estimated the amount of money required, and asked for it. Now, under mission funding, there are new forms, workload is given by both NAVSEA and the Fleet, the Capabilities plan is submitted to both, and there is a mix*

of cost reimbursable as well as Mission Funded work. NAVSEA 04 is actively involved, but their role is not well defined. Last year when the mission-funded budget was put together there was open communications among OPNAV N43, Pacific Fleet N43, and PSNS. This year NAVSEA 04 has been inserted into the process to define reimbursable work and eliminated the direct link with OPNAV N43 with no perceived value added. Regarding new work, under NWCF, if the customer had money and the maintenance activity had capacity, the work could be done. Now, under mission funding, if the customer wants to add work, there must be a schedule shift. NAVSEA 04 will get involved and add its constraints, complicating the former simple process. [This is a decision point that has gone up a level.]

700 Cranes

800 not used

900 Production Resources Officer: *Training, flexibility in overhead, process improvements, quality improvements, safety improvements are easier under Mission Funding. However, accounting for everything, obtaining tools and plant operating equipment is harder under Mission Funding because they compete with funds for production material, overtime, and travel.*

Deputy Productions Resources Officer

Shop Superintendent

General Foreman Inside Shop: *No big changes other than working with pre-paid labor already mentioned.*

Foreman, Motor Regional Repair Center: *No change.*

1100 Admin & HR

1200 Business and Strategic Planning Officer: *Emergent work, CasReps, high priority, RATA, for the surface ships are all better under Mission Funding. However, it is harder to get money for SRM, Facilities, overtime, and material.*

Deputy Business Officer: *Taking on emergent work is easier under Mission Funding. However, accounting and contracting, due to different man-day rate (actual vs. stabilized makes trade-off more costly) are more difficult under Mission Funding. Temporarily there is a convoluted accounting of transitioning working capital projects. It is harder to react to change due to*

poor performance or growth or new work. Still can have many funding documents on the same ship.

Business Manager for Benchmarking and Regional Repair Centers

Business Agent for Regional Repair Centers: *With the RRCs a system of “Virtual Mission Funding” was set up and running for several years prior to PSNS going mission funding. Under Virtual Mission Funding, expenses of the RRC had been paid for at the beginning of the fiscal year by contributions of each Type Commander, based on their predicted workload. In the shop itself, workers were not segregated as to what project they work on – they worked in the most efficient way as a team working on all Type equipment together. Because of this Virtual Mission Funding experience, the transition to mission funding has been very easy. However, cannot shift funding between ship type. Print requests must now go through business agent. Packing and crating require separate funding document for each ship type – used to have a master budget.*

Business Manager for Aircraft Carrier

Business Agent for Aircraft Carrier Overhaul: *Too early to tell. There is no 50 percent review to prepare for nor is there a monthly Financial Cost Estimate as there was under NWCF. Under NWCF, the budget for the overhaul had been built from the bottom up. That is, starting with the work that was desired to be accomplished during that overhaul, estimates of the cost to perform that work would be compiled into a final price that would be charged the customer. Now, under Mission Funding, the budget is built from the top down, that is, the number of man-days and budget for material (includes overtime and contracts) is set and the business agent needs to build a work package that will match the pre-set budget. Under mission funding, the Final Review Estimate letter was difficult to write because of the different way the budget for the overhaul was developed. Accounting forms were more difficult due to the transition period. Items had to be tracked using multiple tracking numbers. Accounting for material that had been ordered under NWCF (obligation status) had to be converted to the mission funding system (expenditure status). Under mission funding, material ordering for the project had to be shut down three times. Travel is harder. Over-obligation and over-commit looks like over-expend. Must keep up on*

*reconciling. There is additional work due to STARS entries.
No change with respect to Cost Reimbursable work.*

Organizational Map of Interview Question 5: “What natural improvement tendencies exist under each scheme?”

Customer Representative, Carrier Type Commander: [No answer]

100 Shipyard Commander

200 Engineering, Planning, and QA Officer

300 Operations Officer: *Under mission funding, the overall maintenance system as a whole can be challenged to improve by either a challenge to do better (a challenge to complete the total year's mission below budget) or a requirement to improve (where the budget is reduced up front). Under working capital, on the other hand, the focus would have been on individual projects and the opportunities to improve the system would have been less recognized. There is a myth that if a job is completed in less time than the official estimate that the official estimate will be reduced the next time that job comes up. Statistics do not show this to be true no matter whether mission or working capital funding. There are only rare instances where the “learning curve” in fact goes down. What is required to have a downward learning curve is having the same people repeat the very same job on an identical ship. One case where the learning curve went down was when a particular team stayed together to perform a standardized alteration on several TRIDENT submarines, which had a high level of configuration control.*

Project Superintendent, Submarines: *Motivation comes from performance being measured against a set budget. Also you know that your inefficiencies will negatively affect other projects resulting in less overall maintenance being accomplished. If one project is spending at a lower-than-expected rate, Fleet can temporarily redirect unused funds to different a high priority project.*

Assistant Project Superintendent, Submarines: *The funding scheme is not visible to the production workers; they just want to get the boat completed. Under NWCF, projects were often de-sensitized, or insulated from the results of their spending decisions.*

400 Contracts Officer

500 Supply

600 Comptroller: *If we improve our performance better than the budget, we can use the money in other areas that need it, such as retooling, training, annual leave, or doing additional work on ships. All of these are good for the Navy. Under working capital, completing work below budget would mean the money would go to the NOR*

account. The downside is that this amount of money would not be available to the fleet for operations whereas under mission funding it could have been. Comptroller's office may eventually reduce in size.

Deputy Comptroller

Budget Officer: [No answer]

700 Cranes

800 not used

900 Production Resources Officer: *Performance measurement system has not changed at the deck plate level.*

Deputy Productions Resources Officer

Shop Superintendent

General Foreman Inside Shop: *Because of known limitations on mission-funded labor, there is a drive to streamline processes and cut waste. Accounting is much closer. This results in more drive to keep within budget (e.g., at the 50 percent review of each job). If a particular job is worked consistently below estimate for two or three consecutive instances, the planners will reduce the official estimate for that job.*

Foreman, Motor Regional Repair Center: *Estimates had been drastically reduced, but Foreman did not know the cause. He assumed it was an engineered change rather than strictly an empirical one. Because of the low estimates, the RRC works consistently 15 percent to 25 percent above estimate. [Note that the estimate is applied by the planner from a set of standards.]*

1100 Admin & HR

1200 Business and Strategic Planning Officer: *The strategic reason for going to mission funding is that CNO wanted to get the money under CNO control in order to balance with fleet needs. In the long run, employee numbers are easier to change, taking the control away from NAVSEA.*

Deputy Business Officer: *Under Mission Funding, improved performance will allow resources to become available for equipment/facility maintenance and training. Under NWCF, if we spent too much it was visible for all to see. Under Mission Funding, costs can be masked. Material and process shops are not visible.*

Business Manager for Benchmarking and Regional Repair Centers

Business Agent for Regional Repair Centers: *The only performance improvement tendency is the overall mission of getting Sailors to sea safely. No change because of past several years the RRCs have worked under Virtual Mission Funding.*

Business Manager for Aircraft Carrier

Business Agent for Aircraft Carrier Overhaul: *Motivation is to support the Capability Plan. To stay within the man-day limit with a clear goal that everyone can agree upon. Can negotiate to add or subtract work or increase man-days. AirPac and PSNS upper management talk to the project more often to see how it is progressing. In the past, reporting was more vague & work could be added. The project staff have not changed their mindset yet. They still tend to anticipate material or equipment contingencies by ordering more than they actually need and use up the material budget.*

Organizational Map of Interview Question 6: “How does funding scheme affect delegation of authority and decentralization?”

Customer Representative, Carrier Type Commander: *Less because the money budgeted for repair goes directly to the repair activity without going through AirPac.*

100 Shipyard Commander

200 Engineering, Planning, and QA Officer

300 Operations Officer: *No change in authority.*

Project Superintendent, Submarines: *Same authority, but more responsible, more accountable. Potential new work could be decided at project level but could take away resources from higher priority work elsewhere.*

Assistant Project Superintendent, Submarines: *More responsibility/ accountability for spending at the individual level. The Supply Officer exhibits more ownership over material ordering, ensuring that duplicate ordering does not occur.*

400 Contracts Officer

500 Supply

600 Comptroller: *Under Mission Funding, the Comptroller has more authority, along with legal responsible party status under public law 31 USC 1571. Can now authorize shifting funds, but now responsible for any violations of the rules governing such shifts.*

Deputy Comptroller

Budget Officer: [Not specifically answered]

700 Cranes

800 not used

900 Production Resources Officer: *The same amount of authority no matter which funding scheme.*

Deputy Productions Resources Officer

Shop Superintendent

General Foreman Inside Shop: *No difference in authority.*

Foreman, Motor Regional Repair Center: *No difference in Authority.*

1100 Admin & HR

1200 Business and Strategic Planning Officer: *Fleet approval is required more. Business office has less authority to manage accounts. Decisions have gone up a level. [increase in centralization]*

Deputy Business Officer: *No difference in authority. For this position, it is personality driven and does not have to do with funding scheme.*

Business Manager for Benchmarking and Regional Repair Centers

Business Agent for Regional Repair Centers: *A little less authority – now deals through Comptroller instead of directly with customer – like adding a “reduction gear” to the system.*

Business Manager for Aircraft Carrier

Business Agent for Aircraft Carrier Overhaul: *Less authority. Comptroller has more. Business Agent no longer signs funding document, but is still considered to be the funds administrator. Now must go through Comptroller for such things as purchasing parts from Norfolk Naval Shipyard.*

Organizational Map of Interview Question 8: “How does each funding scheme affect communication across the interfaces in the organization?”

Customer Representative, Carrier Type Commander: *More interface with the comptroller.*

100 Shipyard Commander

200 Engineering, Planning, and QA Officer

300 Operations Officer: *No change – has always stayed connected with Fleet as well as NAVSEA. New organizations are LBOD and BECB. Deal much more with Comptroller, slightly less with type commanders.*

Project Superintendent, Submarines: *Comptroller is more controlling, watching more closely – a good thing.*

Assistant Project Superintendent, Submarines: *There is a lot more contact with the Business Office on a day-to-day basis. They are interested in project status and spending rate. There is additional contact with the New Work Acceptance Committee because any unplanned work must be weighed against the priority list of all work on all projects.*

400 Contracts Officer

500 Supply

600 Comptroller: *No change because this funding scheme change is still a pilot and must be prepared to switch back to NWCF if instructed to do so. May change after pilot period is over. Now deal with Fleet comptroller staff. They are “wired” into PSNS&IMF comptroller staff, watching obligation rates. LBOD, BECB.*

Deputy Comptroller

Budget Officer: [Not answered]

700 Cranes

800 not used

900 Production Resources Officer: *Now have BECB to help Comptroller with spending decisions. Noted that the increase in Fleet control is more important to the*

recent changes than the particular funding scheme choice – could have also worked under NWCF. Also noted that mission funding can be risky at the fiscal year end.

Deputy Productions Resources Officer

Shop Superintendent

General Foreman Inside Shop: *Shop planners who used to be Shop 51 employees are now under Code 909 and are resourced back to Shop 51. Deal with shop requesting support work to record time only, no billing takes place. Shop 51 must now take the cost of material for parts manufacturing out of its own (Shop 51) material budget. These parts go into the supply system. Feels that Shop 51 should quickly place an order to supply for the parts it has manufactured & “paid for” so that it will benefit from the material cost [Gaming the system]. Other comment: From mid-level management to the worker level feel that they haven’t been fully trained/informed on all the changes and expectations with regard to how mission funding is supposed to work at their levels.*

Foreman, Motor Regional Repair Center: *No change.*

1100 Admin & HR

1200 Business and Strategic Planning Officer: *More organizations involved. More communication with Type Commanders.*

Deputy Business Officer: *Comptroller has a stronger role. Finding the information necessary for accounting takes more work. Now, with the LBOD, there are more metrics. There are three bosses: NAVSEA 04, NAVSEA 08, and Pacific Fleet. Although Pacific Fleet pays for everything, NAVSEA 08 and 04 still dictate how the shipyard is operated.*

Business Manager for Benchmarking and Regional Repair Centers

Business Agent for Regional Repair Centers: *No longer deal directly with the offices of the type commanders. Deal more with the comptroller. NAVICP now handles some of SUBPAC funds for parts and equipment.*

Business Manager for Aircraft Carrier

Business Agent for Aircraft Carrier Overhaul: *Now dealing with Comptroller on spending rate and rollover of funding from NWCF to Mission Funding. Works very closely in support of Comptroller Office. Dealing more and more directly with AirPac. AirPac had been an approval step, but now AirPac directly checks on progress and goes through the LBOD for prioritizing their work. Business Agent has less contact with Project Superintendent and with C. 300.*

APPENDIX E. LIST OF CHANGES DUE TO SWITCH TO MISSION FUNDING

<u>Process or Issue</u>	<u>Navy Working Capital Funding</u>	<u>Mission Funding</u>	<u>Type*</u>
Funding analogy	Credit Card	Checkbook	B
Negative Balance	Allowed	Prohibited	B
Funding – Direct control:	Type Commander - funds stay with particular type of ship	PacFlt controls – funds go directly to PSNS	A+
Life of Funding	Over the life of the project	Cut off at end of fiscal year	B
Control of Spending/ Obligation rate	Business Agent & Project Office	Comptroller controls with the help of the new Budget Execution Control Board. Aim at early obligation of funds. Comptroller requires more control documentation on services such as printing and packing.	A+
Material ordering	Over-ordering tolerated.	Over-ordering not tolerated. More Comptroller control. Assist shops charge material costs to requesting shop. Need care not to run out of material before the end of the fiscal year.	A+, B
Payment for Material	At time it is used (ordered for contingency, convenience, opportunity)	At time it is ordered (ordered as needed only)	B
Overtime:	Shop Superintendent monitored their own overtime budget	Overtime Control Board manages for entire command. Ops Officer monitors	A+
Hiring	Department Heads controlled	Comptroller controls with the help of the Budget Execution Control Board	A+
Contract Work	Charged to Project	Charged to material budget. Tracked carefully.	A+
Project Budget	Done at Business agent level	Done at higher level.	A+
Regional Repair Center Budget	Calculated and tracked separately. “Fenced” workforce.	Part of PSNS&IMF Budget. RRCs must now compete for funding and manning.	A+
Fixed Price Estimates	Estimate to finish project. Was the basis for “profit” or “loss” which affected the NOR	Not applicable. No longer calculated.	B
Stabilized Man-day Rate	Calculated in order to pass on overhead charges to customer	Not required because overhead is Mission Funded along with labor except as noted below.	B
Determining cost of work	Stabilized Man-day rate	Rate calculated by hand for rare instances of non-navy work, such as work for the State of Washington	B
NAVSEA Programs	Funded through surcharge	Must make other arrangements.	A+
Working the system	Try to get a high fixed price	Placing orders for parts just manufactured at own RRC for NAVICP in order to recover material used from Mission budget.	B
Overall Project priority:	Operations Officer decided (based on CNO guidelines)	LBOD decides project priority	A+
Emergent work / Shifting workforce	Not O.K. to work without funding document even if workers are available. General Foreman could accept new work (with proper funding document).	No funding document required. O.K. to work immediately if workers are available. Decision to accept new work now with New Work Acceptance Committee (miscellaneous and fleet work, not entire projects)	A+, B

Completing work below estimate:	Would build up NOR. Would not cross ship types. Would not be available to the fleet for other purposes.	Allows more work to be done the same fiscal year. Can be done on different ship type or otherwise unfunded project such as small purchase of shop equipment. Money can be used for facilities/equipment, training, returned to the fleet for operations	B
Driving factor at the Pacific Fleet Level	Schedule	Funding	B
Planning for an overhaul of a ship	Start with jobs desired, estimate funds required	Start with funds available, estimate which jobs can be accomplished	B
Slack periods	Shop for more work to fill in	Train, clean & maintain the shop	B
Improvement tendencies	Motivated to improve performance on just the immediate project.	Opportunity to improve the entire maintenance system. Because of known limit to manpower, there is a drive to streamline processes and cut waste.	B
Amount of work from the Type Commander level	The max amount they can pay for.	The max amount they can schedule.	B
Work negotiation	Fleet Comptroller (Possible)	Type Commander, Submarine Squadron	A-
Guaranteed Work	PSNS using NIF Manual	LBOD	A+
Job Order Numbers	Directly attached to specific funding	For record purposes only.	B
Moving workers between projects		Resources more readily moved to higher priority projects.	C
Workers loaned from other sites within NW region	Specialized, limited number, infrequent	General and specialized, many loaned, frequent	B, C
Workers loaned from other activities	Loans from Pearl Harbor on different funding scheme (Mission) and claimant (Pacific Fleet).	Loans from Norfolk and Keyport more difficult due to different funding (NWCF) and claimant (NAVSEA).	C
Worker attitude	Motivated to perform as a business.	No business motive – reached a comfort level (referring to Pearl Harbor). Feel more part of the fleet (PSNS). No difference at the working level.	B
Organizational Level at which change in funding scheme had no effect		No change in decisions made by foreman level and below.	N/A
Changes at the Interfaces		More dealings with the Comptroller at several levels. New control boards: LBOD, BECB. More dealings between Project and Business offices. Modifications to business between shops. More dealings between Business Office and Type Commanders	C
Authority/Responsibility		Responsibility/accountability shifts towards the Comptroller.	A>
Cross-department decisions		Comptroller decisions affect Operations. At PSNS&IMF Comptroller helped by BECB. Not so at Pearl Harbor.	A>
Accounting		More frequent reporting and tracking. Using same accounting for project budget as under NWCF.	C

*Type of change column symbols:

A: Change in organizational level at which control is exercised. A+ means that the control went up at least one level, A- means it went down, A> indicates a lateral transfer.

B: Change in criteria and/or motivation for decisions.

C: Change in results or internal procedures.

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